

R E P O R T R E S U M E S

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EDUCATION AS AN INSTRUMENT OF NATIONAL POLICY AND ECONOMIC DEVELOPMENT IN THE REPUBLIC OF CHINA, PHASE 1--EDUCATION AS AN INSTRUMENT OF NATIONAL POLICY IN SELECTED NEWLY DEVELOPING NATIONS.

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AN EXAMINATION WAS MADE OF THE EDUCATIONAL POLICIES AND PROGRAMS OF THE REPUBLIC OF CHINA IN RELATION TO ITS NATIONAL GOALS FOR ECONOMIC DEVELOPMENT. THE OBJECTIVES WERE TO INVESTIGATE (1) THE EXTENT TO WHICH THIS NATION DELIBERATELY USES ITS EDUCATIONAL INSTITUTIONS AS AN INSTRUMENT OF NATIONAL DEVELOPMENT POLICY, (2) HOW EDUCATION IS CONTRIBUTING TO THE ACHIEVEMENT OF THESE GOALS, (3) WHAT EVIDENCE EXISTS THAT DESIRED RESULTS ARE BEING ACHIEVED, AND (4) WHAT NEW EDUCATIONAL REQUIREMENTS ARE NEEDED TO MEET NATIONAL DEVELOPMENT GOALS. VISITS WERE CARRIED OUT TO SCHOOLS, INDUSTRIES, AND GOVERNMENTAL ORGANIZATIONS FOR DISCUSSIONS WITH STUDENTS, EDUCATORS, WORKERS, INDUSTRIALISTS, AND OFFICIALS. TO COLLECT OBJECTIVE DATA, THREE SEPARATE BUT COMPLEMENTARY SURVEYS WERE CONDUCTED--(1) THE VOCATIONAL-INDUSTRIAL SCHOOL STUDENTS SURVEY, (2) THE VOCATIONAL-INDUSTRIAL SCHOOL GRADUATES SURVEY, AND (3) THE FACTORY SKILLED WORKER FORCE SURVEY. THESE SURVEYS PROVIDED VALID DATA FOR RECOMMENDED POLICY, PROGRAMS, AND IDENTIFICATION OF FUTURE RESEARCH. RECOMMENDATIONS ON NATIONAL EDUCATIONAL POLICY CHANGES AND REORGANIZATION WERE MADE IN NINE AREAS OF RESEARCH. (HB)

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EDUCATION AS AN INSTRUMENT OF NATIONAL POLICY
IN SELECTED NEWLY DEVELOPING NATIONS

Phase I: Education as an Instrument of
National Policy and Economic
Development in the Republic of China

Cooperative Research Project No. 1032

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FOREWORD

We live in a period of great expectations. The people of the newly developing nations have visions of a life potentially free from hunger, disease, ignorance, and serfdom. These awakened peoples, constituting a formerly depressed two-thirds of the human family, are on the march in Africa, in Asia, and in the Americas. They are determined to create viable economic institutions, laws, and mechanisms through which they can assure themselves and their posterity of health, longevity, the material necessities, and even some luxuries. They seek dynamic but dependable political institutions and customs through which justice and freedom may be maintained. They desire social conditions which generate equality of opportunity and create respect for human dignity.

In these heroic efforts to create a better life, the leaders of the nations conceive of education as the tool to shape the new life for their people. To produce more food and fiber, farmers and fishermen must be taught modern practices. To process producer and consumer goods efficiently from the raw resources of field, forest, mine, and sea, labor and management must know modern industrial techniques. To distribute the goods and services, men must learn the economics of marketing and of consuming. Education--both general and technical--has become a major weapon in the struggle of economic growth. Similarly in changing old customs and in developing new political and social institutions and mores, the school plays an increasingly crucial role.

During the past 15 years the newly developing nations have requested assistance in education planning from the UN agencies FAO, ILO, WHO, UNESCO, and the Technical Assistance Board. On a bilateral nation-to-nation basis, the United States, the USSR, France, Germany, Japan, the Commonwealth Nations, and other technologically developed peoples have been loaning their educational technicians to those nations requesting aid. The largest of such aid programs has been that provided by the United States Agency for International Development. Private corporations, foundations, and other segments of the United States community have made an additional contribution through their non-governmental channels to the gigantic task of creating the educational establishments overseas within which human resources could be developed.

While there is general agreement on the crucial role of education in the developmental processes, there is a critical scarcity of research to discover what educational approaches and strategies may be most effective under differing national and cultural conditions. With assistance from the United States Government, private foundations and corporations, and other sources, the Stanford University School of Education and the Stanford Research Institute have been engaged since

1955 in a variety of research activities to help fill the gap in research-based literature on the subject of educational investment in nation building. Planned, underway, or completed is a series of research projects investigating education as an instrument of national policy in (1) nations emerging from several differing colonial systems, (2) several technologically newly developing nations that have always been politically independent, and (3) several advanced nations that have a long history of independence. From the series of comparative studies an attempt ultimately will be made to extract any generalizations and principles that may lie unobserved or untested at present. From these generalizations and principles there might be constructed strategies that would help both donor and recipient as educational technical assistance is brought to bear on nation building.

The study here reported is one of this series. Under a contract with the Cooperative Research Bureau of the U.S. Office of Education, Mr. Donald M. Foster, then a Research Assistant in the Stanford Comparative Education Center, was sent to Taiwan to study Education as an Instrument of National Policy for Economic Development in the Republic of China. Chinese friends and colleagues in Taiwan gave the Foster family a warm welcome. Our American associates in the Embassy, in AID, in private foundations, and in private life, contributed materially to the pursuit of the research in Taiwan. Their encouragement and assistance is gratefully acknowledged.

Mr. Foster's work in Taiwan helped stimulate his counterparts in the Ministry of Education to request technical assistance in a thorough study of manpower and educational development for the Republic of China. Under joint sponsorship of the Asia Foundation and U.S. Agency for International Development, Stanford Research Institute and Stanford University extended this study in 1962 and published the report Education and Development, the Role of Educational Planning in the Economic Development of the Republic of China.

Mr. Foster subsequently was awarded the Stanford University doctorate for his research. In cutting the original manuscript for publication, it was necessary to omit many of the tables, appendices, and the bibliography and to condense much of the other material. The Table of Contents of the complete study is reproduced in the Appendix. The full manuscript may be seen in the Cubberley Library at Stanford University and is also available from University Microfilms, Inc., 313 North First Street, Ann Arbor, Michigan, under the title Education as an Instrument of National Policy for Economic Growth in the Republic of China.

The excerpt here published presents the findings and conclusions of Mr. Foster's research. It is our hope that agencies and individuals,

intent upon using education as an instrument of national purpose, will profit from this report on the Republic of China.

December 31, 1963

Paul R. Hanna, Director
Comparative Education Center
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PREFACE

In the last decade the world observer has viewed convulsive social, political, and economic changes. New nations have emerged; old nations have found it necessary to modify, sometimes radically, their national behavior in order to survive. The decade has been characterized by rapid technological development with the older nations vying with each other for greater technological achievements while the emerging nations have been attempting to achieve, in a short period of time, a level of development comparable to that of the older nations.

One would thus expect that the greatest need of the emerging nations with such goals would be for economic growth. Such growth presupposes, among other things, the ability of the nations to translate their economic goals into the selection, training, and placing of workers in needed categories. This is a specific need, but equal attention must be given to the many other dimensions of human development.

The social institution best equipped to help nations develop their human resources is the educational system. Indeed, of all the social institutions which shape the future of a nation, none is of greater long-range importance. What any country becomes in the future is determined in part by the approach to education taken in the present.

Many technologically developing nations have asked other nations--more advanced economically--to assist them in the development of educational systems which will best serve their national goals. However, the relationships which exist between education and growth are far from precise. This imprecision severely handicaps the consultants who would serve the emerging nations, and ultimately, the nations themselves are handicapped.

It is the opinion of this writer that before significant general principles can be formulated to relate education to its proper role for accelerating technological development, situational studies must be attempted. The present study represents such an attempt. The author spent ten months on Taiwan during 1960-61. During that time he was impressed by the importance of the role of education in determining the future of the Republic of China. This study explores the role of education in the achievement of the national economic goals of this nation.

December, 1963

Donald M. Foster

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Economic growth, however, does not depend solely on training categories of qualified workers to match the anticipated national manpower requirements. In order to achieve economic growth, a new nation must also give parallel attention to literacy, health, democratic political understanding and behavior, and other dimensions of human development. The social institution which has best contributed to the development of modern nations along all of these dimensions is education. For this reason the educational system of a nation becomes a major instrument in the achievement of the national goal of rapid economic, social, and political advancement.

Since technologically developing nations are calling on the United States, other economically more advanced nations, and the United Nations to assist them in the development of educational systems which will serve directly their national goals of growth, educational consultants must be aware that relationships between education and growth are far from precise.

A great deal of the current literature and discussion concerning the newly emerging nations of the world presents pertinent questions to those interested in the role of education as an instrument of national policy. Economists, sociologists, anthropologists, political scientists, educators, and other specialists all have given equal importance to the need to develop human resources as a condition for achieving national goals.

There are many reasons for reconsideration of the size and role of education as an instrument of national policy. Certainly both the

INTRODUCTION

The world of the 1960's is a world of revolution. All over our globe new nations are emerging and old nations are undergoing convulsive changes. Centuries-old economic, social, and political systems are being swept away. Newer systems are being modified and developed to fit the needs of the emerging nations and to help them achieve, in a relatively short time, a level of development comparable to that of the more technologically advanced modern nations.

One would expect, then, that the prevalent characteristics of these technologically developing nations would be their expectation of and demand for rapid economic growth. This demand for economic development poses many problems, among which none is more crucial than translating the national economic goals into categories of trained manpower and providing the institutions for selecting, training, and placing the number of qualified workers required.

Economic growth, however, does not depend solely on training categories of qualified workers to match the anticipated national manpower requirements. In order to achieve economic growth, a new nation must also give parallel attention to literacy, health, democratic political understanding and behavior, and other dimensions of human development. The social institution which can best contribute to the development of human beings along all of these dimensions is education. For this reason the educational system of a nation becomes a major instrument in the achievement of its national goal of rapid economic, social, and political advancement.

Since technologically developing nations are calling on the United States, other economically more advanced nations, and the United Nations to assist them in the development of educational systems which will serve directly their national goals of growth, educational consultants must be aware that relationships between education and growth are far from precise.

A great deal of the current literature and discussion concerning the newly emerging nations of the world presents pertinent questions to those interested in the role of education as an instrument of national policy. Economists, sociologists, anthropologists, political scientists, educators, and other specialists all have given central importance to the need to develop human resources as a condition for achieving national goals.

There are many reasons for recognition of the sine qua non role of education as an instrument of national policy. Certainly both the

United States and the U.S.S.R. have popularized the notion that education is the foundation of economic development. If education is a principal instrument of national policy, it is evident that this instrument, recognized and put to use, can affect the outcome of the ideological struggle between the Soviet Bloc and the Free World. But what is the exact relationship between education and growth? What is the specific role of education in the process of development? Should a nation consider education as an investment in human resource development?

These questions remain largely unanswered although increased attention is being devoted to them. In the consideration of human resources, some economists approach the problem by treating educational expenditure as having a capital investment as well as a consumption component. Such a consideration of education as a means of increasing national income illustrates but one aspect of the relation of education to economic growth. If efficiency, a high national income, or complete national mobilization are primary criteria, study should be given to the methods employed by the U.S.S.R. and Communist China. However, if concern for the individual and democratic values play any significant role in a culture, this view is too narrow. Some would couple "responsible democracy" with economic growth as important national educational goals. Thus the recognition of the important relation of education to economic development is also closely associated with social, essentially non-economic values. An educational system is no longer an instrument simply for the training of the mind. It has become an instrument which reflects and ultimately shapes the entire society in which it exists. Educational goals, therefore, must be clearly defined.

Emerging nations, seeking to accelerate economic development through education, are handicapped by a lack of knowledge of the precise relationships between education and economic development. In view of the current efforts of many nations to accelerate development, it seems reasonable to assume that many studies on this subject must be undertaken in the next decade. These studies undoubtedly will attempt to relate more clearly investment in human resources to the traditional concepts of capital formation. Further studies may lead to the construction of mathematical models which could expedite economic development through more rational educational planning.

It is the opinion of this writer that before significant general principles can be formulated relating education to its proper role for accelerating technological development, situational studies must be attempted in selected nations.

Of all the world's nations undergoing change, none is in a more unique position than China. With a new and unrecognized (by the United States and the United Nations) Communist government holding the entire mainland of China, the older recognized Republic of China is now restricted to a small collection of islands off the mainland. This Republic is faced with many of the same problems as other nations

attempting accelerated technological development. In addition to the necessity for a large military establishment, these problems include population pressure from early advances in disease control and improved nutrition, a comparatively low level of material welfare, much expenditure for conspicuous social consumption, rising expectations, a change in traditional culture patterns, and increased urbanization as emphasis is given non-agricultural sectors of the economy.

That education can play an important role in determining the future of the Republic of China was apparent to the author during a ten-month stay on Taiwan during 1960-61. The fact that the exact nature of this role is as yet undetermined, especially in regard to economic affairs, provides an interesting field for inquiry. The present study attempts to explore the role of education in the achievement of national economic goals in the Republic of China.

THE REPUBLIC OF CHINA. China has a long and rich cultural heritage. The founding of a republic in 1911 at the collapse of the Manchu Dynasty introduced a new era of Chinese history. The direction of internal and external policies has been contested since the organization of the Chinese Communist Party in 1921. Additionally, the struggle by the Nationalist Party (Kuomintang) to unify the nation and the invasion of Japanese forces multiplied problems facing Chinese leaders in their attempt to develop their nation. The struggle for complete control continued between the Nationalist Government and the Communist Organization after World War II.

Today, both governments claim to be the true government of China. Since 1949 the regime of the People's Republic of China has controlled the 46 Provinces and Administrative Areas on the Asian mainland, while the Republic of China has governed the Island Province of Taiwan (commonly called Formosa in the United States) and several offshore islands of the Kinmen and Matsu group, part of Fukien Province.

The Republic of China on Taiwan has received major world attention because it, the legal government of China as represented in the United Nations, no longer controls the vast mainland of China. This world attention is magnified because the two major antagonists in the cold war, the U.S.A. and the U.S.S.R., are involved in the conflict.

The Republic of China and the People's Republic of China both contend that only one government must control China, and civil war is being waged to settle the question.

Since losing control of the mainland in late 1949, the Republic of China has held two primary goals. The goal with first priority, as reflected in the statements of leaders and in national expenditures, is to recover control of the mainland. The second goal is to develop Taiwan into a model province, following the policies set forth by the

Father of the Republic, Dr. Sun Yat-sen. Since June, 1950, the start of the Korean War, the United States has given increasing support to the Republic's goals through military aid, economic support, and moral encouragement.

THE SETTING. The Republic of China geographically comprises the Province of Taiwan and two island counties (hsien) of Fukien Province. Taiwan Province includes the islands of Taiwan and the Penghu (Pescadores). It is situated less than 100 miles from the Chinese mainland. The Taiwan Strait separates Taiwan from the Chinese mainland to the west; to the east is the Pacific Ocean.

The total area of Taiwan Province covers 13,860 square miles with a coastline of 970 miles. The main island of Taiwan is 250 miles long and 80 miles at its widest point. The Taiwan group includes 14 islands and the Penghu group is comprised of 64 islands.

The Republic of China also includes two island counties (hsien) of Fukien Province. The Kinmen (Quemoy) Island group comprises two islands and twelve smaller islets totaling 68 square miles. This group is located at the mouth of Amoy harbor approximately two miles from the mainland and 85 nautical miles east of the Penghu group. The 19 islet Matsu group is also a part of Fukien Province, a total of 11.3 square miles. The Matsu group is 5.5 nautical miles east of the mainland, 11.4 nautical miles north of Kinmen, and approximately 95 miles west of Taiwan.

THE STUDY. This study attempts to examine Chinese educational policies and programs in relation to national goals for economic development, part of the Republic of China's attempt to make of Taiwan a model province.

More specifically, this research proposes to study the degree to which this nation deliberately uses its educational institutions as an instrument of national development policy, how education is contributing to the achievement of these goals, what evidence exists that desired results are being achieved, and what new educational requirements are needed to meet national development goals.

The following questions are posed to be explored by this research:

1. Does the Republic of China regard education as a major instrument of national policy to achieve economic development goals?
2. Has economic development planning included estimates of manpower needs--both types and numbers?
3. To what extent do estimates of national manpower needs get translated into educational objectives and operations (curriculum,

instructional materials, facilities, personnel, and financing)?

4. What are the provisions and mechanisms for selection and guidance of adequate numbers of students into the curricula that have been designed to meet the nation's manpower needs?
5. To what extent does the economy absorb the graduates of the several curricula into jobs commensurate with their preparation?

These questions have been investigated with the following assumptions in mind:

1. That education can be considered an instrument of national policy for economic development if:
 - a. Expenditures and plans for, and execution of educational programs make a direct contribution to economic development goals;
 - b. Channels exist whereby educational expenditures and programs, their extension, evaluation, and revision are considered in consultation with national economic goal planners;
 - c. Criteria exist whereby educational expenditures and programs are determined on a priority scale along with the more tangible input allocations; and
 - d. Educational policies shift as new or different needs become evident in the transitional stages of technological acceleration.
2. That if the criteria listed above (1) do not exist, it is still possible for the researcher to infer the degree to which education is viewed as an instrument for economic development by studying selected educational and economic institutions within this nation.
3. That field observation, including interviews and other survey techniques, can identify agreement or discrepancies, if any, existing between stated goals and actual practice.
4. That the researcher can hypothesize about probable causes for the agreement or discrepancies existing between stated goals and actual practice.
5. That research herein described can contribute needed information to a technologically developing nation because its present critical problems may have precluded such research.
6. That legislation, executive orders, policy statements, and other publications pertaining to education and to economic development are indicative of underlying beliefs and of efforts to achieve

national development goals.

7. That proportionate budget allocations among national departments are indicative of the importance with which planners and leaders view various aspects of the total national effort--including education.
8. That published reports of agencies and experts are useful indices of needs and objectives when used in combination with other indices.
9. That other sources of answers to the questions can be identified and described. These include special interest groups, enlightened leadership, pressures for or against change, and other situational factors.

The study is limited to the following investigations:

1. Identification of national goals for economic growth, stated and implied manpower requirements to achieve these goals, and policy statements of Chinese ministries and agencies relative to the achievement of these stated goals.
2. Examination of forces that have shaped and are shaping Chinese educational policy, organizational structure of Chinese educational institutions, and the relationship of these institutions to national goals.
3. Areas of cooperation and the degree of coordination between the educational institutions and other government agencies.

Since previous and current educational research projects in Taiwan have been limited to specific aspects within the discipline of the social sciences, there is no precedent for this research. This is the first time a study has been undertaken to examine the effect of national goals upon educational policies.

The difficulties encountered by a scholar undertaking research in a foreign nation have been well documented. These difficulties may range from the dearth or invalidity of available statistics to the inability of the foreigner to adapt to cultural patterns and language in the host nation. The additional but related problems faced by this author in his study were: (1) a dearth of pertinent contemporary educational research, and (2) several restrictions on inquiry imposed because China is at war.

Dearth of Pertinent Contemporary Educational Research. The Asia Foundation in 1960 commissioned an expert on China, Wolfram Eberhard, to survey the status of social science research on Taiwan.¹ Dr. Eberhard

1. Wolfram Eberhard, "Social Science Research in the Republic of China" (Taipei, Taiwan, June 7, 1960). (Typewritten report to The Asia Foundation, 29 pp.)

describes the problems of research in the social sciences under the following headings: (a) a lack of interest in field research, (b) interest in speculative theories, (c) lack of knowledge of research methods, (d) shortage of young scholars, (e) overburdening of teachers, and (f) lack of teaching materials.

The writer informally introduced Dr. Eberhard's opinions to several Chinese leaders. While several concurred that there was a dearth of contemporary research, one leader explained that the primary reason for this lack is a shortage of money and time. Dr. Wang Feng-chiai stated:

Current research requires survey forms, compilation staffs and travel, all of which require a great deal of time and money. Historical research demands only that one go to the library.²

Leaders such as Dr. Wang emphasized that time and money have been lacking to undertake research. College teachers often have two full-time teaching positions in addition to attending committee meetings (for which there is payment) and writing journal articles for payment. Many Ministry of Education officials also must supplement their low pay with outside activities.

The sources of current research in education in the Republic of China are to be found at the Institute of Educational Research of the Taiwan Provincial Normal University, the Graduate School of Education at the National Chengchi University, the China Education Society, the Educational Research Council of the Ministry of Education, Taiwan Provincial Department of Education In-Service Training Workshop, and the Taiwan Provincial Normal University Department of Vocational-Industrial Education.

A survey of the publications of the Taiwan Provincial Normal University Institute for Educational Research shows that of the twenty-six published studies, only two deal with contemporary educational issues on Taiwan.³ Even these two studies are more preoccupied with the application of philosophical thought of pre-republic dynastic leaders than with current problems.

Master degree candidates of the National Chengchi Graduate School of Education as of January 1961, have completed forty-three theses, of which five are in the educational psychology concentration, eighteen in the educational philosophy concentration, and twenty in the educational

2. Interview with Dr. Wang Feng-chiai, January 20, 1961. Dr. Wang is Director of the National Bureau for Translation and Compilation.

3. Shih Fan Ta Hsueh, Taiwan Sheng Li Shih Fan Ta Hsueh Chiao Yu Yen Chiu Shuo Chi Kan, Volumes I and II. (Taiwan Normal University, Bulletin of Institute of Educational Research, June 1958 and June 1959.)

administration concentration. Many of these discuss contemporary educational problems, but only one, A Study of the Curriculum of the Industrial Vocational Schools, by Kao Chuan-lee, deals with vocational education.⁴

This work concerns itself primarily with time allotments for various subjects and with methods of teaching within the vocational-industrial school. Since no relationship between the school and industry is discussed, this paper was of limited value to the author.

Of even less value were other theses which were consulted by the author in the hope of finding relevant material.

The Educational Research Council of the Ministry of Education is a committee made up of Chinese educators. Although it was formed originally to undertake and coordinate research,⁵ this council has not published to date, and so could offer the author no publications of interest.

Committees of the China Education Association have worked or are working upon three studies. Two completed studies deal with (a) aborigine education, and (b) the Entrance Examination. A third study, now under way, concerns juvenile delinquency.⁶

The Provincial Taiwan Department of Education Elementary School In-Service Workshop Center has published several studies. These deal mainly with methods of teaching various subjects, with some research being done on working conditions of teaching personnel. Some of their researches, including health of elementary school children, would appear to be pertinent for making sound policy decisions for the improvement of education on Taiwan.

The Department of Psychology of National Taiwan University has published seventeen studies. Two which should be of use to Chinese educators are: "A Study of Interests of the 1957 Freshman Class of National Taiwan University"⁷ and "Colleges of Science and Agriculture."⁸

4. Kao Ming-ming "Kung Yeh Chih Yeh Hsueh Hsiao Ko Che Yen Chiu" (unpublished master's thesis, Chengchi University, Taipei, 1958).
5. Interview with Acting Minister of Education, Poe Dison, October 13, 1960.
6. Interview with Tsung Liang-tung, Dean of Studies, Taiwan Provincial Normal University, October 11, 1960.
7. Chang Siano-sung and Others, "A Study of Interests of the 1957 Freshman Class of National Taiwan University," ACTA Psychological Taiwanica, No. 1 (Taipei, Taiwan, China: Department of Psychology, College of Science, National Taiwan University, November 1958), p. 85. (In Chinese and summary in English.)
8. Chang Siano-sung and Others, "Colleges of Science and Agriculture," ACTA Psychological Taiwanica, No. 2 (March 1960), p. 43.

According to Dr. Ni Lian of the Psychology Department, much research has been done on testing of abilities and intelligence, but primarily for the Army. She says that although she is willing to cooperate with educators of the Ministry of Education, Provincial Department of Education, Provincial Normal University, or United States educational technicians, to date there has been no coordination of activities or cooperation.⁹

The Taiwan Provincial Normal University Department of Vocational Education has carried out three surveys pertinent to education and manpower training. Published in 1958, the "Comprehensive Report: 1958 Industrial Occupational Survey" canvassed 1,719 industrial establishments on the island of Taiwan.¹⁰ The second, published in 1959, surveyed 3,285 industrial establishments on the island of Taiwan.¹¹ The third, published in 1961, classified residents by occupation in the three cities of Taipei, Keelung, and Hsinchu.¹²

Although of some help to the author in providing statistics, these studies were tabulations with no implications drawn from the statistics. Also, since they are figures compiled at only one point of time they do not provide for growth analysis over any considerable period.

Restrictions on Inquiry. As stated earlier, research in Taiwan is complicated by government restrictions on the use of certain documents. These restrictions are imposed by two governments--Chinese and American.

Among documents classified by the Chinese Government are "Long-Range Plan for Education in Taiwan" and "The Number of Personnel in the Ministry of Education." The reason for this secrecy is the danger of invasion and the strategic importance of secrecy during the wartime emergency.¹³

9. Interview with Dr. Ni Lian, College of Psychology, National Taiwan University, April 12, 1961.
10. Taiwan Kung Yeh Chi Yen Tiao Tsa Tuan, Chung Hua Ming Kuo Ssu Shih Pa Nien Taiwan Chuan Sheng Kuo Chen Shih Chi Shu Yuan Chih Nien Tiao Tsa Tsun Pao Kao Shu (Taipei, Taiwan: 1959). (The Taiwan Occupation Survey Team, Comprehensive Report: 1958 Industrial Occupational Survey-Engineering and Technical Occupation.)
11. 1959 Occupational Survey Comprehensive Report Part I, Distribution of Engineers and Technicians in Taiwan (Taipei, Taiwan, China: The Industrial Occupational Survey Team, December 1959).
12. Taiwan Provincial Normal University Department of Vocational Industrial Education, Three City Occupational Survey (Taipei, Taiwan, China: October 1961).
13. Interview with Tien Shih-tien, Ministry of Education, May 3, 1961.

Various United States Government agencies also classify information concerning United States-Republic of China matters. For instance, Embassy data are classified regarding direct military assistance and USIS attitude surveys; ICA classifies various reports regarding Overseas Chinese Education and Relief Funds disposition.

The restricted files of both governments may contain data which would be valuable in this study, but these were not available to the researcher.

PROCEDURES FOR THE STUDY. The study was conducted in three stages. Stage I was completed prior to field work in Taiwan. It included a survey of relevant literature available in English and the development of a bibliography; the development of questions designed to direct the study in the absence of adequate available literature; and the derivation of assumptions, necessary to undergird the study, from literature on the general topic of education and economic development.

Stage II consisted of field work in Taiwan. This field work included interviews with national and provincial leaders of education and economic affairs, school personnel, industrial managers, teachers, students, and workers. Schools and factories in various areas were visited. In addition, three surveys were made: (1) of 50 selected industrial establishments, (2) of 431 selected graduates of the vocational-industrial school in the machinist and electrician unit-trades, and (3) of 898 selected students in the vocational schools. Different forms were developed for each of the three surveys. Approval for distribution of the surveys was obtained from the Ministry of Education, Provincial Department of Education, and Ministry of Economic Affairs. Data from the surveys were translated, tabulated, and treated according to the posited questions.

Stage III involved drawing conclusions from the findings of the treated data and making recommendations for courses of action together with suggestions for further research.

Following these procedures, then, this study of education as an instrument of economic growth in the Republic of China was carried out.

MANPOWER REQUIREMENTS AND EDUCATION

GENERAL ECONOMIC DEVELOPMENT. The Republic of China is attempting to develop the Province of Taiwan in all ways and as rapidly as possible. The instruments used to define their goals of this development have been a series of three four-year plans. Begun in 1953, the third plan covers the period of 1961-1964.

The economic objectives of these general economic development plans can best be summarized by the statement found within the plan for 1957-1960.

In coordination with the Government's policy of industrial reconstruction of Taiwan, the realization of the Three People's Principles, the fulfillment of responsibilities of fighting against Communist aggression and recovery of the Mainland, the plan is aimed at bringing about the increase of national income, the advancement of employment opportunities, and the balance of international payments by continuing exploration of natural resources, increasing agricultural production, accelerating the development of mining and industry, and expanding the export trade.¹

In general, achievement of these goals is to be expedited by production targets in the various sectors, investments, budgets for allocation of available resources, and structural changes and legislation.

Further, in 1960 the Chinese Government adopted nineteen measures to accelerate economic development by streamlining governmental procedures and legislation. These measures, commonly called the Nineteen Point Development Program, are:

- (1) Encouragement of savings as against consumption: To enhance the virtue of saving through the medium of education and publicity; to promote insurance business including life insurance; to establish a widespread savings network and to simplify procedures for savings; to take tax reduction and tax exemption measures to encourage savings.
- (2) Establishment of Capital Market: To help flotation of corporation bonds by private enterprises; to render assistance in establishing the China Development Corporation and reactivation of the Bank of Communications; to speed up the establishment

1. Economic Stabilization Board, Executive Yuan, Republic of China, Highlights of the Second Four-Year Plan for the Economic Development in Taiwan, August 1957, p. 2.

of stock exchange so as to gradually develop a capital market.

- (3) To make a thorough review of various control measures taken in the past to tide over economic crises and to do everything possible to do away with or to liberalize these measures.
- (4) Further steps will be taken to transfer some public enterprises for private operation; the government will not operate those enterprises which can be privately operated in the future with the possible exception of public utilities and those enterprises which call for government help for their promotion; the government will do everything possible, either directly or indirectly, to protect and to give help to private enterprises.
- (5) The government has given various facilities or preferential treatment to private investments in various aspects covering tax, foreign exchange, and financing. These measures will be reviewed to see whether they can be strengthened and the procedures liberalized or simplified.
- (6) Procedures governing the application for establishment of factories, and for procurement of land plot for industrial uses, procedures governing exit and entry and all other regulations related to investment, establishment of factories and business operation are under broad review and will be revised to meet actual requirements.
- (7) A general survey of all installations of public enterprises (including those for the production of military supplies) will be conducted in an effort to make full utilization of existing capacities.
- (8) Reasonable rates for public utilities will be worked out on a long-term basis and a commission for this purpose has been established.
- (9) To continue the policy of building up the armed forces by emphasizing more on quality than quantity; to carry out the retirement of military personnel; to fix defense budget at the present ceiling in terms of constant prices.
- (10) To reform tax system and taxation administration to enhance capital formation and economic development.
- (11) To improve the budgetary system and to carry out gradually a performance budgetary system so as to fit in with the actual economic conditions and the implementation of government policy and to facilitate cost auditing and efficiency evaluation.

- (12) To abolish hidden subsidies, such as preferential utilities rates and rationing of cheap goods, "charge account" practice of military procurement and low interest loans, thereby explicitly reflecting in the government budget the actual expenses incurred by the military and the administration and profits and losses of the public enterprises.
- (13) Adjustment of pay scales for military personnel and public functionaries and implementation of retirement system, so as to abolish various forms of unjustified allowances and benefits.
- (14) To strengthen auditing of military expenditures.
- (15) A central banking system will be established to effect credit control through adjustment of interest rates and credit to stabilize the economy. A clear line will be drawn between the function of the Central Bank, Bank of Taiwan, and commercial banks.
- (16) All organizations engaged in deposits and loans business will be brought into the framework of the banking system subject to the control of Bank of Taiwan acting on behalf of the Central Bank. A thorough review will be made of the methods and techniques used by the Bank of Taiwan for controlling other banking institutions.
- (17) Operations of various banks will be demarcated in accordance with their functions. Supervision will be strengthened to ensure that these banks will develop within their defined fields and to avoid employment of short-term capital for long-term purposes.
- (18) Reform of foreign exchange and trade systems aims at the establishment of a unitary exchange rate, liberalization of trade control within the premise of the payments situation so as to attain the goal of free transfer of foreign exchange.
- (19) To promote exports, measures for encouragement of exports will be enlarged, procedures governing settlement of foreign exchange earned by exporters improved, and contacts with foreign business organizations increased.²

The goals and governing principles for the Third Four-Year Economic Development Plan were designed around this accelerated economic development program for implementation in the period from the beginning of 1961 to the end of 1964. The statistical targets for increase of GNP, per

2. "The Third Four-Year Economic Development Plan in Taiwan," prepared by Ministry of Economic Affairs (no date) p. 12. (Mimeographed.)

capita income, and expansion of the various sectors are encompassed within the Third Four-Year Plan.

MANPOWER REQUIREMENTS. An even more difficult sector in which to plan than the above mentioned production targets is in the manpower requirements to meet the national goals. The manpower section of the Third Four-Year Plan states:

As of the end of 1959, there were in Taiwan a population of 10,043,100, excluding armed forces. Of these 3,258,000 were economically active with 1,853,000 engaged in agriculture and 442,000 in industries, mining, and transportation. Active population reported in industries and agriculture might include certain disguised unemployment. The wide spread of education in Taiwan has made its labor force both intelligently and physically fit. What is required at present is to give them necessary training to meet the needs of accelerated economic development. Besides, high-skilled workers, technicians, and management personnel are still lacking in certain industries, and should be cultivated through positive vocational education.

To meet these manpower needs, Taiwan had, at the end of 1959, 6.3 million people over 12 years of age, of which 3.2 million are employed. According to Chiang Monlin, 40% of the population is in the productive age of 20 to 59 years while more than half the population are under 20 years of age.³ Because many of the 40% are public functionaries and administrators, Dr. Chiang concludes that one-fourth of the population shoulders the production load.

Population. However, these 1959 figures (the latest available) are low, since Taiwan has had, and continues to have, an increasing population. Up to 1895 the major cause was immigration; from 1895-1945 it was primarily due to lowering the death rate, and from 1945 to the present, combinations of immigration, lower death rate, and continued high birth rate. Projections have been made which indicate that, unless controlled in some way, this population growth will continue (see Table 1).

Recognizing the problems posed by this threatened growth, Chinese leaders state in the Third Four-Year Plan:

To alleviate the pressure exercised by population growth on economic development, it is hoped that increase in population (3.3% in 1961) will slow down by 0.1% per year. Total population of Taiwan

3. Chiang Monlin, Taiwan's Increasing Population: A Pressing Problem (Taipei, Taiwan, Republic of China: April 1959), p. 1. (English & Chinese)

TABLE 1
SUMMARY OF VARIOUS POPULATION PROJECTIONS FOR TAIWAN
TOTAL POPULATION
(in thousands)

Year	United Nations	Mr. Chen ^a	Lu Tun-yih Study ^b		
			High A	Medium B	Low C
1940	-	5,510	-	-	-
1945	-	6,229	-	-	-
1950	7,478	7,026	-	-	-
1955	8,916	7,922	-	-	-
1956	-	-	9,298	9,298	9,298
1960	10,591	8,942	-	-	-
1961	-	-	11,188	11,135	11,064
1965	12,552	10,098	-	-	-
1966	-	-	13,431	13,197	12,893
1970	14,838	11,418	-	-	-
1971	-	-	16,021	15,298	14,670
1975	17,670	-	-	-	-
1976	-	-	19,153	17,534	16,443
1980	21,272	-	-	-	-

a. Taiwanese only.

b. Lu Tun-yih, "Population Projections for Taiwan 1956-1976,"
Industry of Free China, XIII, No. 2 (February 1960), 18.

will then increase from 11,394,000 (including servicemen) in 1961 to 12,898,000 in 1964, an increase of 1,504,000 at an annual rate of 3.1%. As to employment, the number of population gainfully employed is estimated at 3,340,000 in 1960, which will rise to 3,714,000 in 1964, an increase of 374,000, of which 74,000 will be in agriculture, 117,000 in industry, 23,000 in transportation and communications, and 160,000 in others. Based on population data now available, working population between the ages of 20 to 59 will increase by 521,000 from 1961 to 1964. Deducting women engaged in household work, students, and servicemen, real number of the increased population requiring employment will be around 380,000.

If this Plan is carried out as planned, there should not be much difficulty in solving the employment problem. Table 2 shows projections of population and employment increase during the Plan period.

In the table referred to in the above reference, recognition is given to importance of how population figures are distributed throughout the nation's economic structure.

Economic Structure. The composition of the labor force has changed slightly since 1952 when accelerated economic development plans were inaugurated, and predictions indicate further change (see Table 3). Although population increase can be noted in all sectors, proportions have changed particularly in recent years. From 1956 to 1959 the change in the economic structure developed as shown in Table 4.

Thus, it can be seen that the proportion of the population engaging in commercial and industrial activities has increased while those in agricultural activities has decreased. By the same token, national income originating from the industrial sector has increased while that from agriculture has decreased. Foreign trade reflects the same trend, with exports of industrial products increasing proportionately over agricultural products. Imports of capital goods and industrial raw materials have been consistent with this trend as consumer goods decrease proportionately.

EDUCATION. To accommodate such changes, and to adjust raw manpower to the specific needs of the economic structure, education is needed--education which is phased into the manpower goals. But the place of the educational enterprise in the development task has not been clearly defined.

It is perhaps significant that education is the only area for which the constitution stipulates that a specific proportion of the budget be allocated. The constitution states that not less than 15% of the total National Budget, not less than 25% of the total Provincial Budget, and

TABLE 2
PROJECTION OF POPULATION AND EMPLOYMENT INCREASE DURING
THE THIRD FOUR-YEAR ECONOMIC DEVELOPMENT PLAN PERIOD^a
Including Servicemen
(Persons in Thousands)

	1960		1961		1962	
	Number	Index (1960 = 100)	Number	Index of Number over 1960	Number	Index of Number over 1960
Total Population (average rate of increase 3.1%)	11,394	100	11,770	103.3	12,146	106.6
				Projected rate of increase over previous year (3.3%)		752
Population, 20-59 years of age	4,527	100	4,701	103.8	4,830	106.7
Economically active popu- lation engaged in:	3,340	100	3,431	102.7	3,527	105.6
Agriculture	1,872	100	1,891	101.0	1,910	102.0
Industry & Mining	350	100	375	107.1	406	116.0
Comm. & Transpt.	100	100	107	107.0	113	113.0
Others (Education, Public Health, Construction, Com- merce, Finance, Public Ad- ministration, and other services.)	1,018	100	1,058	103.9	1,098	207.9
						80

a. "Third Four-Year Development Plan," Appendix 4.

TABLE 2 - Continued

PROJECTION OF POPULATION AND EMPLOYMENT INCREASE DURING
THE THIRD FOUR-YEAR ECONOMIC DEVELOPMENT PLAN PERIOD^a
Including Servicemen
(Persons in Thousands)

	1960		1963		1964	
	Number	Index (1960 = 100)	Number	Index	Number	Index
					Increase of Number over 1960	Increase of Number over 1960
Total Population (average rate of increase 3.1%)	11,394	100	12,523	109.9	1,129	113.2
				Projected rate of increase over previous year (3.1%)	12,898	1,504
Population, 20-59 years of age	4,527	100	4,943	109.2	416	111.5
Economically active popu- lation engaged in:	3,340	100	3,616	108.3	276	111.2
Agriculture	1,872	100	1,928	103.0	56	104.0
Industry & Mining	350	100	432	123.4	82	133.4
Comm & Transpt.	100	100	118	118.0	18	123.0
Others (Education, Public Health, Construction, Com- merce, Finance, Public Ad- ministration, and other services.)	1,018	100	1,138	111.8	120	115.7
					1,178	160

a. "Third Four-Year Development Plan," Appendix 4.

TABLE 3
TAIWAN PROVINCE PEOPLE AND ECONOMIC ACTIVITY (EMPLOYMENT)^a
(Unit 1,000 Persons)

End of Year by Sex	Total Pop.	Economic Activity - Those above 12 Years Old										
		Total	% Men Women	Agric.	Mining	Ind.	Bus.	Comm. Trans.	Civ. Serv.	Free Ent.	Prof. Serv.	Oth.
1952 total	8,128	2,884	35.48	1,791	36	235	252	66	124	73	226	81
Male	4,156	2,188	26.92	1,261	32	208	232	63	112	56	162	62
Female	3,972	696	8.56	530	4	27	20	3	12	17	64	19
1953	8,433	2,895	34.31	1,812	37	234	251	68	119	75	226	73
	4,327	2,208	26.17	1,277	33	208	232	65	109	58	168	58
	4,111	687	8.14	535	4	26	19	3	10	17	58	15
1954	8,749	2,949	34.29	1,812	38	251	251	77	179	81	252	58
	4,487	2,306	26.60	1,291	33	222	232	74	167	63	198	46
	4,262	673	7.69	521	5	29	19	3	12	18	54	12
1955	9,077	3,024	33.31	1,811	38	258	253	80	179	85	269	51
	4,647	2,345	25.83	1,287	33	228	233	76	167	66	215	40
	4,430	679	7.48	524	5	30	20	4	12	19	54	11
1956	9,390	3,015	32.11	1,807	38	260	252	80	177	87	269	46
	4,796	2,335	24.16	1,276	33	230	233	76	165	68	216	37
	4,594	680	7.24	530	5	30	18	4	12	19	53	9

a. Hsing Cheng Yuan, Li Fa Wei Yuan Shou Tse, (Taipei, Taiwan; Executive Yuan, Legislators Handbook. No date.) p. 12.

TABLE 3 - Continued
 TAIWAN PROVINCE PEOPLE AND ECONOMIC ACTIVITY (EMPLOYMENT)^a
 (Unit 1,000 Persons)

End of Year by Sex	Total Pop.	Economic Activity - Those above 12 Years Old										
		Total	% Men Women	Agric.	Mining	Ind.	Bus.	Comm. Trans.	Civ. Serv.	Free Ent.	Prof. Serv.	Oth. empl.
1957 total	9,690	3,110	32.09	1,810	41	282	262	86	194	94	292	49
Male	4,942	2,416	24.93	1,283	36	249	240	81	181	72	235	39
Female	4,748	694	7.16	527	5	33	22	5	13	22	57	10
1958	10,039	3,190	31.78	1,813	42	303	274	90	203	99	303	49
	5,121	2,497	24.87	1,294	37	268	250	85	190	75	247	39
	4,918	693	6.91	519	5	35	24	5	13	24	56	10
1959	10,431	3,289	31.53	1,853	44	318	289	95	213	107	310	45
	5,336	2,516	24.69	1,323	39	280	263	90	198	80	253	38
	5,095	713	6.84	530	5	38	26	5	15	27	57	7
												3

a. Hsing Cheng Yuan, Li Fa Wei Yuan Shou Tse, (Taipei, Taiwan; Executive Yuan, Legislators Handbook. No date.) p. 12.

TABLE 4
CHANGES IN ECONOMIC STRUCTURE, 1956-1959^a

	GNP	
	1956	1959
<u>Net Value added by origin</u>		
Agriculture	32.9%	29.9%
Industry, mining, electric power, and construction	25.5	28.3
Commerce and others	41.6	41.8
Total	100.0%	100.0%
<u>Manpower Force</u>		
	1956	1959
<u>Employment by sectors</u>		
Agriculture	59.2%	56.9%
Industry	10.9	10.6
Commerce and transport	10.9	11.8
Others	19.0	20.7
Total	100.0%	100.0%
<u>Export composition</u>		
Agricultural products, processed and not processed	86.9%	78.0%
Industrial products	11.9	21.1
Others	1.2	0.9
Total	100.0%	100.0%
<u>Import composition</u>		
Capital goods	24.2%	31.0%
Raw materials	50.5	49.2
Consumer goods	25.3	19.8
Total	100.0%	100.0%

In the above table (Table 4) either the origin of net value added, the distribution of employment by sectors, or the composition of import and export, shows a general trend that the part played by agriculture in the whole economy has been on the decrease while that of the industry on the increase.

a. "Third Four-Year Economic Development Plan," p. 3.

not less than 35% of the total County (hsien) and Municipal budgets shall be "Expenditures for educational programs, scientific studies, and cultural services."

The National Government has not met the constitutional provision since coming to Taiwan in 1950. However, it can be seen from data in Table 5 that Taiwan Province, Counties, and Municipalities often have met or surpassed the minimum percentage of expenditure named in the constitution.⁴

Reflecting this emphasis, an important place is accorded education in government publications reviewing economic and social development. Minister of Economic Affairs Yang's ten-year report points out that, "hand in hand with Taiwan's economic development, great strides have been made in social development in the period under review."⁵ He then summarizes the advances made in primary, secondary, vocational, higher, and other educational programs. There appears to be genuine belief that education contributes to development. In this regard, Minister Yang has said that human capital formation plays an important role in economic development. He states:

The ways the Government has been taking to speed up economic growth through education are:

- (1) implementation of agricultural extension programs;
- (2) conducting training within industry;
- (3) dissemination of modern technical knowledge through community schools;
- (4) researching techniques of production within industries as well as in specified institutes, and training senior engineering and management personnel in universities and colleges;
- (5) enforcing direct participation and employment in different fields with the skills or knowledge learned in the education agencies concerned; and
- (6) conducting occupational surveys with a view to getting some comprehensive understanding of manpower requirements for formulating vocational training programs.⁶

4. For further verification of this statement, the reader is referred to Appendix 2 of the original study, available from University Microfilms, Inc., 313 North First Street, Ann Arbor, Michigan, under the title Education as an Instrument of National Policy for Economic Growth in the Republic of China.

5. C. T. Yang, Economic and Social Development in the Republic of China (Taipei, Taiwan: China Productivity and Trade Center, January 1960), p. 11-12.

6. C. T. Yang, "Educational Measures to Economic Development in Taiwan," addendum to personal letter sent to writer, dated November 16, 1960.

TABLE 5

PUBLIC EXPENDITURE ON EDUCATION^a
Central Government
(Unit: NT\$ Thousand)

Object of Expenditure	Fiscal Year									
	1953	Jan.-June 1954	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60		
Total public expenditure	13,000	15,912	41,286	73,330	114,714	133,056	143,304	155,722		
Per cent	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
Administration	1,148	981	1,552	1,679	5,008	2,690	2,825	2,778		
Per cent	8.83	6.16	3.76	2.29	4.36	2.02	1.97	1.78		
Higher education	3,156	9,765	26,040	29,577	43,592	40,949	52,542	50,838		
Per cent	24.28	61.37	63.07	40.33	38.00	30.78	36.67	32.65		
General education	2,197	870	1,235	3,120	6,054	16,409	3,810	3,799		
Per cent	16.90	5.47	2.99	4.25	5.28	12.33	2.66	2.44		
Social education	1,499	778	1,768	1,935	6,378	8,095	11,207	6,149		
Per cent	11.53	4.89	4.28	2.64	5.56	6.09	7.82	3.95		
International cultural relations	772	409	1,480	1,515	6,211	7,295	10,059	15,940		
Per cent	5.94	2.57	3.58	2.07	5.41	5.48	7.02	10.24		
Cultural affairs	3,244	1,830	-	-	-	-	-	-		
Per cent	24.95	11.50	-	-	-	-	-	-		
Scholarship and student aid	984	1,279	1,956	2,605	2,361	3,457	4,456	6,106		
Per cent	7.57	8.04	4.75	3.55	2.06	2.60	3.11	3.92		

a. Educational Statistics of the Republic of China, Ministry of Education, 1960, pp. 67-69.

TABLE 5 - Continued

PUBLIC EXPENDITURE ON EDUCATION^a
Central Government
(Unit: NT\$ Thousand)

Object of Expenditure	Fiscal Year									
	1953 Jan.-June 1954	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60			
Leaders training Per cent	-	-	7,255 17.57	10,764 14.68	8,187 7.14	8,187 6.15	10,693 7.46	11,080 7.11		
Organized activities relating to instruction Per cent	-	-	-	22,135 30.19	36,923 32.19	45,974 34.55	45,212 31.55	54,032 34.70		
Long-range program for development of science Per cent	-	-	-	-	-	-	2,500 1.74	5,000 3.21		
Per cent to total expenditure of Taiwan Provincial Government	24.62	23.03	25.04	25.78	24.15	27.18	27.90	28.66		
Total public expenditure Per cent	143,596 100.00	78,986 100.00	172,405 100.00	199,838 100.00	257,341 100.00	303,494 100.00	325,361 100.00	367,819 100.00		
Administration Per cent	5,542 3.86	2,586 3.27	3,745 2.17	3,013 1.51	2,112 0.82	3,255 1.07	2,162 0.66	-		
Higher education Per cent	38,610 26.89	13,347 16.90	29,702 17.23	34,258 17.14	48,480 18.84	52,008 17.14	61,736 18.97	67,983 18.48		

a. Educational Statistics of the Republic of China, Ministry of Education, 1960, pp. 67-69.

TABLE 5 - Continued

PUBLIC EXPENDITURE ON EDUCATION
Central Government
(Unit: NT\$ Thousand)

Object of Expenditure	Fiscal Year						
	1953	Jan.-June 1954	1954-55	1955-56	1956-57	1957-58	1958-59 1959-60
Secondary education							
High school	33,824	20,794	49,339	57,808	77,973	88,659	93,208 109,466
Per cent	23.55	26.33	28.62	28.93	30.30	29.21	28.65 29.76
Normal school	15,530	9,862	21,113	21,821	26,042	26,606	29,174 32,089
Per cent	10.82	12.48	12.25	10.92	10.12	8.77	8.97 8.72
Vocational school	27,069	16,546	35,780	40,152	44,901	47,917	57,414 63,331
Per cent	18.85	20.95	20.75	20.09	17.45	15.79	17.65 17.22
Primary education	5,261	2,805	11,499	6,357	8,860	7,168	7,638 9,587
Per cent	3.66	3.55	6.67	3.18	3.44	2.36	2.34 2.61
Social education	7,313	7,224	10,368	6,379	13,871	16,112	13,331 17,843
Per cent	5.09	9.15	6.01	3.19	5.39	5.31	4.10 4.85
Others	10,447	5,822	10,859	30,050	35,102	61,769	60,698 67,520
Per cent	7.28	7.37	6.30	15.04	13.64	20.35	18.66 18.39

a. Educational Statistics of the Republic of China, Ministry of Education, 1960, pp. 67-69.

TABLE 5 - Continued

PUBLIC EXPENDITURE ON EDUCATION^a
Central Government
(Units: NT\$ Thousand)

Object of Expenditure	Fiscal Year									
	1953	Jan.-June 1954	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60		
Per cent to total expenditure of Hsien and Municipal governments in Taiwan Province	34.71	34.93	35.25	37.36	36.33	35.05	36.10	36.80		
Total public expenditure	196,368	130,592	366,113	400,095	472,783	535,394	631,371	741,377		
Per cent	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
Secondary education	36,107	21,519	62,257	71,118	104,531	120,921	145,962	160,900		
Per cent	18.39	16.50	16.99	17.78	22.11	22.59	23.11	21.70		
Primary education	113,182	102,132	283,105	304,886	341,199	378,646	447,612	536,169		
Per cent	72.91	78.14	77.26	76.20	72.17	70.72	70.90	72.32		
Social education	6,341	2,633	6,094	9,205	6,598	9,621	5,805	9,917		
Per cent	3.24	2.01	1.67	2.31	1.39	1.80	0.92	1.34		
Others	10,718	3,978	14,957	14,856	20,455	26,206	31,992	34,371		
Per cent	5.46	3.05	4.08	3.71	4.33	4.89	5.07	4.64		

a. Educational Statistics of the Republic of China, Ministry of Education, 1960, pp. 67-69.

Because the Minister's thoughts are significant to this study, a larger portion of his memorandum is hereby included:

As to whether the fundamental or the vocational education is more important to economic growth, it is a question of what stage of economic development the particular country has reached. Fundamental education is more important than vocational for a primary producing country, and vocational education will become more and more important as the country steps into the stage of industrialization. As a matter of fact, Free China has entered into an industry era, we must lay emphasis on vocational training. For this reason, the Chinese Government conducted an occupational survey in 1959 as a stepping stone to work out a program of optimum allocation of resources among fundamental, vocational and other educations.

Besides, with a view to long-range development, emphasis could also be imposed upon university and college education to foster senior engineering and management personnel from highly developed countries. Therefore, this category might be less important than both of the above mentioned for less-developed countries.

Referring to the immediate concern of this study, he says,

how large a proportion of the increase in labor productivity could be attributed to the extension of education is no way measurable under existing conditions. Therefore, we are still uncertain what the optimum allocation of resources among education and other investment needs is.

It is evident from the Minister's statement that since input allocations are uncertain and cannot be measured at this time, a problem exists for budget planners.

It is not possible to isolate the allocation of funds for education in the Third Four-Year Plan since education is included only under the heading, "Others," in the published report of allocation and sources of funds.

For security reasons it was not possible for the writer to obtain an itemization of the national budget. However, the amount of the national budget available for development is estimated to be 6.01% of the national expenditures for fiscal year 1960 and to increase to 7.85% in fiscal year 1961. The main sources of income are various taxes and profits from government owned enterprises.

Educators have expressed their dilemma concerning sound proportionate allocation of funds for education. Acting Minister of Education Foo Dison told the writer that each year the Minister of Education must strive very hard to increase his budget when hearings are held at

the Executive Yuan.⁷ Additionally, Harry Schmid, Education Chief of International Cooperation Administration/United States Overseas Mission/China (ICA/USOM/China) informed the writer that as far as he knew no criteria exist to allocate funds to various aspects of the educational system. He felt the needs were so evident and the pressures so great that the Chinese and American educators have not had the time to examine the question critically and adequately.⁸

The quantitative increase in school enrollments and facilities has been notable in the past ten years. A summary of this increase can be seen in Table 6.

It would appear that the increase of educational facilities has been a burden. The increase in per capita responsibility for all government, as well as the part of government budget allocated to education continue to rise. The responsibility/capita for total hsien and city budgets has increased from three to five times. The responsibility/capita for the educational budget has, in most cases, also risen from three to five times.⁹

The ability to pay has not kept pace with the increased costs of education and other governmental responsibilities. The rise in per capita income during the same period can be seen in Table 7.

The question arises then that, given the Chinese national goals, identification of problems, and task of providing educational facilities, how are the Chinese going to accommodate their needs to available resources? How, too, are they going to attempt the merging of educational programs and national goals? The Ministry of Education appears to assign these questions to the area of vocational education.

Thus far two papers have been prepared by the Ministry of Education relating education to the Third Four-Year Plan. One paper attempts to describe what new requirements are implied in the plan.¹⁰ The method used is to take the number of the existing workers in various industries and extrapolate by percentage increase. Their findings are seen in Table 8.

7. Poe Dison, personal interview, October 12, 1960.

8. Harry Schmid, personal interview, September 23, 1960.

9. The reader is referred to Appendix 4 of the original study.

10. Chiao Yu Pu, "Ti San Chi Szu Nien Chin Chien Chi Hua Teen Chia Chin Yeh Jen Yuan Shu." (Ku chi). Taipei, Taiwan. (Ministry of Education, "Estimation of the Increase of Employment of the Third Four-Year Economic Development Plan," 1959.) (Mimeographed.)

TABLE 6
GROWTH OF EDUCATIONAL FACILITIES, 1951-1960^a

	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Kindergarten										
Schools	39	42	72	86	99	107	133	182	300	319
Classes	510	601	842	898	1,039	1,236	1,274	1,511	1,773	1,883
Students	21,511	28,511	37,729	41,137	46,390	54,239	56,988	64,167	73,235	79,702
Staff	190	493	745	991	1,163	1,476	1,533	1,905	2,336	2,575
Elementary										
Schools	1,248	1,251	1,300	1,350	1,391	1,478	1,534	1,609	1,712	1,795
Classes	17,743	18,833	20,211	22,025	23,911	25,943	28,077	30,707	33,314	35,670
Students	970,664	1,003,304	1,060,324	1,133,438	1,237,904	1,336,024	1,471,706	1,635,166	1,769,445	1,879,428
Staff	21,682	23,939	26,030	27,944	30,208	32,775	35,298	38,512	42,121	45,118
High School										
Schools	129	129	133	137	249	108	194	207	225	242
Classes	1,815	1,936	2,186	2,544	4,441	3,425	3,968	4,372	4,819	5,371
Students	85,673	92,946	106,306	125,203	212,977	170,425	193,428	208,775	232,000	262,707
Staff	5,387	5,592	6,263	7,219	8,195	9,519	10,740	11,971	13,194	14,484
Vocational										
Schools	77	77	81	91	95	97	105	109	109	109
Classes	895	947	1,049	1,210	1,378	1,496	1,601	1,674	1,803	1,958
Students	36,616	40,092	45,601	52,830	60,397	65,903	69,823	71,832	77,800	84,337
Staff	3,524	3,502	3,792	4,302	4,846	5,326	5,360	5,994	6,419	6,980
Normal										
Schools	8	8	8	9	9	9	10	10	10	10
Classes	144	146	144	149	154	152	158	161	163	165
Students	6,241	6,350	6,014	6,539	6,782	6,935	7,272	7,211	7,244	7,522
Staff	648	658	657	707	720	732	747	733	766	756

^aA class is a basic unit of the Chinese educational system. It may consist of any number of students.

^bIt was not possible for the writer to obtain a breakdown of teaching and non-teaching personnel.

^cInformation by writer of data from Taiwan Provincial Department of Education, Wufeng, Taiwan.

TABLE 7
THREE DIFFERENT ESTIMATES OF PER CAPITA INCOME AT 1954 PRICES^a

Year	New Estimates			DOBAS Estimates			ICA-Mission Estimates		
	NT\$	Index	Growth Rate	NT\$	Index	Growth Rate	NT\$	Index	Growth Rate
1951	1,899	88.12		1,647	82.10				
1952	2,048	95.04	7.85	1,799	89.68	9.23	1,757	86.85	
1953	2,229	103.43	8.84	2,000	99.70	11.17	2,044	101.04	16.33
1954	2,155	100.00	-3.32	2,006	100.00	0.30	2,023	100.00	-1.03
1955	2,349	109.00	9.00	2,052	102.29	2.29	2,007	99.21	-0.79
1956	2,447	113.55	4.17	2,093	104.34	2.00	2,005	99.11	-0.10
1957	2,533	117.54	3.51	2,168	108.08	3.58	2,064	102.03	2.94
1958	2,520	116.93	-0.51	2,228	111.07	2.77	2,122	104.89	2.81
Average growth rate			4.22			4.48			3.71

a. Hsing Mo-huan, "New Estimates of the National Product of Taiwan, 1951-1958," National Taiwan University (no date), p. 23. (Mimeographed.)

TABLE 8

PROJECTION OF JOB REQUIREMENT INCREASE NEEDED BY 1964
IN THE THIRD FOUR-YEAR PLAN^a

Industry	Total Staff ^b & Workers	Engineers	Technicians	Skilled Workers	Non-Skilled Workers	Staff
Mining	117,000	2,188	5,582	50,840	45,255	13,135
Communication & Transportation	23,000	270	2,350	7,700	4,400	8,300
Agriculture	74,000	340	1,765	26,200	41,100	4,600
Other	160,000	2,992	7,698	72,000	61,400	16,910
	374,000	5,790	17,395	156,740	152,155	42,945

^aExcludes management.^bChiao Yu Pa, "Ti San Chi Szu Hien Chin Chien Chi Hua Tsen Chia Chiu Yeh Jen Yuan Shu." (Ministry of Education, "Estimation of the Increase of Employment of the Third Four-Year Economic Development Plan.") p. 5.

The second paper prepared by the Ministry of Education specifically relates human resource development to vocational education.¹¹ The paper suggests strengthening the vocational schools in order that more of them might qualify for United States aid. Another suggestion is to start an "Opportunity Vocational Education Demonstration Center." This center would provide youth who have left school with training to enable them to enter industry. The other recommendations in this paper are: (1) expand vocational teacher education, (2) start a special school for gifted students, (3) start a special school for the physically handicapped in vocational training, (4) start a National Committee for the Conservation of Human Resources, (5) employ experts from the Ministry of Economics and the Ministry of Communication to design the above named committee.

In order to be more clearly understood, these problems of vocational education must be seen against the background of educational philosophies, attitudes, and goals in the Chinese culture, and the structure of the national school system itself.

11. Chiao Yu Pu, "Ti San Chi Ssu Nien Chin Chien Chi Hua Yu Kuan Seng Tsan Chi Shu Yu Kuan Li Jen Tsai Chih Pi Yang Yu Kung Yin Chu Pu Kou Hsiang Chuan Kuo Jen Li Tsu Yuan Yang Hu Chi Hua Ti Yao," (Taipei, Taiwan: April 1961). (Ministry of Education, "A National Plan of Conservation of Human Resources.") (Mimeographed.)

CHINESE EDUCATIONAL GOALS AND THE NATIONAL SCHOOL SYSTEM: AN HISTORICAL OVERVIEW

Man has used various methods and institutions to carry on what we now call education. Whatever the methodology has been, the primary purposes of the instruction have been to perpetuate, to maintain, and to improve the society. True, conflict often will arise over variant opinions as to what must be perpetuated, what should be maintained, and what constitutes improvement.

Although the presence of such conflict is scarcely unique to China, it is nonetheless real to Chinese educators who must accommodate traditional cultural ideals within their technologically accelerated society. Educational goals are changing. The recent intention to reactivate the Ministry of Education Committee for Education and Economic Development may be a significant step toward this change.¹ This committee, composed of leaders in educational and economic affairs, may stimulate more participation by educators in formulating targets for the Third and Fourth Four-Year Plans.

As these recent developments of educational policy are important in providing understanding of the role education may play in achieving national goals, so too is an overview of factors which have influenced Chinese educational goals in her past history. Equally important are the differences, historical and current, between education on the Chinese mainland and on Taiwan.

TRADITIONAL CHINESE EDUCATION. Most discussions of Chinese education start with the teachings of Confucius, which were later perpetuated by the evolution and development of an intricate examination system. It is necessary to treat briefly both Confucian teaching and the examination system because of their effect upon current educational practice in the Republic of China.²

Confucius considered himself a transmitter of Chinese traditions. The purpose of Confucian education was twofold: good government and the ideal man. Confucius describes an ideal man as one (1) possessed of knowledge, (2) free from covetousness, (3) brave, (4) accomplished, (5) well versed in courtesy, ceremony, and music. He emphasized the power of the virtuous example of rulers to influence their people.

1. Intention to reactivate committee stated by Minister of Education Huang Chi-lu, conversation, July 28, 1961.
2. A more thorough discussion of the examination system and its implications for study of modern Chinese education can be found in Wolfgang Franke, The Reform and Abolition of the Traditional Chinese Examination System (Cambridge, Mass.: Center for East Asian Studies, Harvard University Press, 1960), viii-100 pp.

Confucius placed stress upon ceremony and ritual, not for their intrinsic value, but as a method for achieving self-discipline. That self-discipline can take the form of unthinking acceptance of the teacher's ideas is an inherent possibility in such a philosophy. From observing classes in middle schools and colleges, it appears to this observer that the opinions of Confucius' two main disciples have resulted in an interpretation of Confucianism as embodying the belief that one's teacher is always right. Although the two main disciples of Confucius, Mencius and Hsun Tzu, disagreed on the nature of man, it would appear that both disciples agreed that the student should consider his teacher as all-knowing. Many Sinologists conclude that this rigidity, incorporated into the examination system, was one reason for the static nature of Chinese society, pressures against which resulted in violence and revolution.

Confucius himself seemed to demand no such blind faith, nor was he certain that he had sublime truth, but believed that students must think for themselves. The "Analects" of Confucius emphasize virtue that is characterized by filial piety and fraternal submission as the root of all benevolent actions. Included in the "Analects" are examples of how to be an ideal man and worthy of a governmental leadership role. Since Confucius was concerned primarily with the problems of men living together, instruction came to have a social and political view. The Chinese attitude toward intellectualism, which results in the Chinese emphasis on education, learning, and thinking, can be attributed to the Confucianist injunction to "study widely, inquire minutely, think carefully, and practice earnestly."

It is pertinent to our study to see what happened to this heritage in practice. The dramatic changes instigated by the Confucian school caused a shift from a hereditary and military aristocracy to an aristocracy of merit, virtue, and administrative achievement. Most authorities credit the examination system with being instrumental in this change.

The examination system was started in the Western or former Han Dynasty (ca. 206 B.C.-9 A.D.). The tests were competitive, objective, and open to everyone with ability. Until 622 A.D. the examinations were given at random intervals. After that date regularly scheduled local and national examinations were held. By 1370 an examination system had evolved which was conducted with regularity and rigidity until its abolition in 1905.

The scholar class which arose from the examination system has left the positive legacy of prestige for scholarship as well as the negative image of resistance to change. That very prestige, with its concomitant privileges gave the scholars a vested interest in perpetuating their positions, and they vigorously opposed change.

This legacy from traditional Chinese education has been

transformed in part by influences from the more technologically developed nations. These influences, commonly referred to as "Western," are credited with altering, for good and evil, the evolution of Chinese cultural institutions.

WESTERN INFLUENCES. The United States Mutual Security Mission to China established an Educational Division in 1952. At no time in the history of China has "Western educational influence" been more enthusiastically received. The favorable reception of this mission stands in sharp contrast to the treatment accorded American missionaries of the 1840's who met violent opposition to such practices as the inclusion of "practical" subjects in the curriculum as opposed to the "traditional" learning of the Confucian classics. The missionaries persevered, however, and the gradual acceptance of "Western" educational systems and subjects was due largely to their efforts.

Another significant influence in changing Chinese education was foreign incursions. For example, following the Opium War in 1840, the 1858 Treaty of Tientsin required that all communications to the Chinese Government be in the English language and must be accepted as the official version. The direct result of this treaty was the founding of a foreign language school (Iung Wen Kuan) at Peking in 1862.

Educational goals were thus changed to accommodate a new need. The Government then proceeded to organize other schools for special purposes. Between 1860 and 1895 thirteen such government schools were established, devoted to language, Western law, navigation, engineering, mining, telegraphy, and military tactics. As these schools enlarged their curriculum to embrace other aspects of science, there was much dissent among the scholars. This struggle between those advocating the change of educational objectives and those against change was to continue until the shattering finality of the violent Boxer Rebellion of 1900.

After the failure of the Boxer Rebellion to eject foreigners and their ideas from China, the empress dowager Tzu-Hsi bowed to the need for change. Decrees in 1901 and 1902 re-established the University of Peking, ordered that selected youths be sent abroad for study and that Western knowledge should be planned for and encouraged. The creation of a national office of education in 1902 and abolition of the examination system in 1905 officially recognized new educational objectives.

It can be seen, then, that China struggled for over 60 years before officially embracing new objectives upon which to base the use of education as an instrument of national policy. Forces born during these years resulted in conflicts lasting to the present day. Since 1901 the main question has been not whether to accept "Western" ways but rather what techniques and institutions from the West will best serve the interests of China.

SUN YAT-SEN. Most policy statements concerning education in the Republic of China refer to the Three Peoples' Principles of Sun Yat-sen.

Dr. Sun Yat-sen recognized a distinctive role for education in order to achieve his objectives for China. His first political message to the people of China advocated, among other things, full development of human talents, vocational guidance, specialized training for exceptional students and modern science and technology.³

It was in 1905, with the founding of the Tung Men Hui, the forerunner of today's Kuo Min Tang (National Party), that Sun began outlining his Three Peoples' Principles of Nationalism, Democracy, and Livelihood, as well as the five-power governmental structure. From this beginning evolved the structure and ideology of the Republic of China.

The principle of Nationalism emphasizes the need to extend family and clan loyalty to the nation, as opposed to the traditional concept of loyalty to a dynastic ruler. The nation must become strong, Sun said, in order to "use the strength of our four hundred millions to fight for mankind against injustice; this is our divine mission."⁴ The means to this end were to revive ancient Chinese morality and political philosophy, learn Western science and technology, and do away with foreign domination.

The principle of democracy, or Peoples' Sovereignty, is based upon the concepts of political equality. With political equality, man could develop himself according to his own intelligence and ability. Whatever a man's endowments, his purpose should be to serve the best interests of the people and nation. He also believed that the people, although sovereign, should rely on experts to guide the government and strongly urged differentiation between sovereignty and ability.

The five branches (Yuans) of the government--Legislature, Judiciary, Executive, Civil Service Examinations, Censorship--were to be established under a system of checks and balances. The Examination Yuan was included for continuing the tradition of civil service examinations. The Censorship Yuan was to serve a super-judicial function for all government operations.

The third principle, that of Peoples' Livelihood, refers to the

3. Carl Glick and Hong Sheng-hwa, Swords of Silence (New York and London: McGraw-Hill Book Co., Inc. and Whittlesey House, 1947), p. 96.

4. Sun Yat-sen, San Min Chu I, The Three Peoples' Principles, trans. Frank W. Price (Taipei, Taiwan: China Cultural Service, 1953), p. 24. (Original Price translation, August 1922, from Tenth Chinese Book, published by Commercial Press of Shanghai in May 1927.)

availability of food, clothing, shelter, and transportation. Progress in the West, which China should follow, was made through "social and economic reform, nationalization of transportation and communication, direct taxation or the income tax, and socialized distribution or cooperative societies."⁵ While refuting Marxism, Sun proposed equalization of land ownership and regulation of capital as first steps to carry out his Livelihood Principle.⁶

Sun elaborated this principle in Fundamentals of National Reconstruction⁷ and The International Development of China.⁸ These plans, heuristic in nature, describe programs for the development of agriculture, industry, housing, transportation, and communication.

Dr. Sun emphasized education in many of his writings. He advocated general education for the young and adult education as necessary for local self-government.⁹ In 1920 he advocated free education which would include "tuition, books, clothing and board being supplied by public authorities."¹⁰ He lists adult education, consisting of public lecture halls, libraries, and night schools, as well as graded schools from kindergarten to college, in his educational plan. He advocates one month's free labor each year donated by the people to finance the project.

Important to this study is Sun's statement concerning the use of the hands and "sacredness" of labor. He states, "Schools should teach the usefulness of the hands for practical purposes apart from developing the student's ability, knowledge and intellect."¹¹ He recognizes a need for schools to be "concerned with the manufacturing of highly

5. Ibid., p. 171.

6. Ibid., p. 170.

7. Sun Yat-sen, Fundamentals of National Reconstruction (Taipei, Taiwan: China Cultural Service, Sino-American Publishing Co., Ltd., 1953).

8. Sun Yat-sen, The International Development of China (Taipei, Taiwan: China Cultural Service, Sino-American Publishing Co., Ltd., 1953).

9. Sun Yat-sen, "Self-Government as the Basis of Reconstruction," speech delivered at a meeting of the Arcadia Forum at Chang's Garden, Shanghai, July 17, 1916, in Fundamentals . . ., p. 146.

10. Sun Yat-sen, "First Steps of Local Self-Government," Fundamentals . . ., p. 71.

11. Ibid., p. 72.

finished machinery and the promotion of industry.¹² He elaborated upon this theme in 1921 when suggesting "more schools should be established, and more students be sent abroad to study in technological colleges."¹³ He considered these two steps as well as the employment of foreign technicians, to be necessary to the industrialization of China.¹⁴

Upon Sun's death in 1925, the mantle of leadership was assumed by Chiang Kai-shek. Today, on Taiwan, Sun Yat-sen is considered the Father of the Republic, while Chiang Kai-shek is referred to as the Savior of the Nation.

CHIANG KAI-SHEK. Chiang Kai-shek's prestige and power as President of the Republic as well as Director General (Tsungtsai) of the KMT cannot be overemphasized. Historically the national leader in China has been considered the family head of all the families comprising the nation. Thus, the powers, virtues, and responsibilities of the traditional patriarchal family head also are assumed by the national leader.

This traditional concept added to the historical events since the founding of the Republic and leadership of Sun Yat-sen tends to place responsibility on one individual for all policy-making aspects of Chinese national affairs. This individual, holding the dominant position of leadership in the Republic of China since the death of Sun in 1925, has been Chiang Kai-shek.

Chiang's statements concerning education, as in most other areas of national life, provide a guide for the implementation and educational policies at all levels in the hierarchy. Some of his writings and statements regarding the educational enterprise, taken from Chiang's supplements to the Livelihood lectures left incomplete by Dr. Sun's death, are especially pertinent.¹⁵

Chiang points out that in the patriarchal family system of an agricultural society it is the family and clan that are the primary educational agencies; with the industrialization of China, the school must take over the position of the principal educational agency. In

12. Ibid.

13. Sun Yat-sen, "How To Develop Chinese Industry," Fundamentals . . . , p. 188.

14. Ibid., p. 189.

15. Chiang Kai-shek, Chapters on National Fecundity, Social Welfare, Education and Health and Happiness, trans. Durham S. F. Chen (Taipei, Taiwan: China Cultural Service, no date), v-107 pp. (Note: Although there is no date, the context would appear to be circa. 1953.)

this light, then, we can begin to understand the responsibility placed upon the school in today's Republic of China.

The President corroborates this implication by stating that the *Min-sheng* (Livelihood) education must include intellectual, physical, moral, and social aspects. Without these four areas, plus good planning, "education would not have fulfilled its mission nor discharged its responsibility as the mainspring of social reform."¹⁶

Charged with a primary responsibility for promoting social progress and national regeneration, the school program must include the following:

- (a) Physical and mental health.
- (b) An ethical and moral life, which consists in the belief in cooperation and mutual help as one's basic personal code, on the one hand, and in a harmonious living with members of one's family and with fellow members of society on the other.
- (c) Family life, including such domestic duties as cleaning and dusting, and rules on the proper modes of speech and conduct.
- (d) Occupational life, including productive techniques and the spirit of service.
- (e) Life as a citizen, including essential knowledge about local, national, and world conditions as well as democratic habits.
- (f) Ability to express oneself and do intellectual work including the ability to make use of language in speech and writing.
- (g) Profitable use of leisure, including the preservation of one's health, appreciation of beauty, and attainment of a happy life.¹⁷

In the early 1950's the President also called for coordination between political and economic planning and the school programs. The definition of goals for particular parts of the educational enterprise are set forth by the President.

Family Life Education is to be a cooperative enterprise between school and family to prepare the student to participate in achieving the betterment of society. The responsibility of the school is to impart the following knowledge and instruction:

- (a) The position and responsibilities of the family in relation to society and the nation; an ethical view based upon the assumption that the family is the foundation of the state.
- (b) The family organization and the student's relationship with his kith and kin; the importance to the student of the "six rules of conduct,"--filial piety, fraternal affection,

16. Ibid., p. 46.

17. Ibid., p. 49.

neighborliness, love of kindred, sense of duty, and philanthropy.

- (c) Domestic duties such as cleaning and dusting; proper modes of behavior in the family; practical ways of life in connection with food, clothing, housing, and means of travel.
- (d) Care and guidance of children; management of family affairs and domestic duties; elementary knowledge of hygiene and medicine; economy of family expenses; cultivation of the "four virtues" of propriety, righteousness, incorruptibility, and honor.¹⁸

Civic Education embraces the formal curriculum as well as extra-curricular activities by including:

- (a) A knowledge of the essentials of the San Min Chu I (Three Peoples' Principles), the ideas and ideals of democracy, and the democratic way of life.
- (b) A knowledge of the principles underlying the political institutions of the Chinese Republic, and the methods to be employed in the exercise of the rights of suffrage, initiative, referendum, and recall.
- (c) A knowledge of the position and future prospects of the country in the changing world situation.
- (d) A knowledge of the position which Chinese culture occupies in world culture, and the resulting responsibilities of the Chinese people.
- (e) A knowledge of the contributions which science has made to society and the nation.
- (f) Cultivation of the student's interest in the study of social problems through practical life; training of the student in the methodology of studying social problems through field investigations.
- (g) Cultivation of patriotism and the national spirit through boy scouting, national military training, and labor service.¹⁹

Military Training incorporated in civic education, tries to assure that:

a citizen who has undergone such a course of training will instinctively identify himself with the nation and take the national weal or woe as his own. The cultivation of this mental attitude is precisely what national military training aims at doing. It is only with this end in view that we can make the training really profitable for the citizen, both physically and spiritually.²⁰

18. Ibid., p. 55.

19. Ibid., p. 57.

20. Ibid., p. 66.

Occupational Training, according to Chiang, should be wider in scope than the present system of vocational middle schools and should be broadened to include primary school education as well. This broadening should encompass:

- (a) A knowledge of social and economic conditions and the cultivation of the student's ability to handle economic matters on the basis of his experience gained from family life. (This is where family life education can be of valuable help to occupational training.)
- (b) A knowledge of China's natural resources, international economic relations, and social problems. (This is where civic education can be of valuable help to occupational training.)
- (c) Development of a philosophy of life that is creative, positive, and characterized by initiative, a sense of responsibility, and a spirit of service; cultivation of the student's ability to be as dexterous with manual as with mental work; training in mutual help, cooperation, and methods for the division of labor.
- (d) A knowledge of the ways and technical ability to preserve physical and mental health, reduce the incidence of injuries, and promote personal safety while working.
- (e) Training in the use of basic tools for the increase of efficiency in work, e.g.,
 - 1. Mathematics, elementary knowledge of science, and the ability to use the pen to express oneself.
 - 2. Field survey of productive enterprises and market conditions; methods of gathering information.
 - 3. Methods of collecting and sifting social and economic statistics.
- (f) Cultivation of a sense of responsibility for the management, care, repair, and maintenance of machine tools; ability to make estimates of, and to check, business expenses; an elementary knowledge of ways to increase production through economy and to make use of waste material for profitable purposes.²¹

Because of the progressive development of industrialization and the concomitant needs for specialization, the President suggests on-the-job training and school cooperation with factories, mines, farms, and government departments.

College and University Education is viewed as "pursuing advanced knowledge and the cultivation of the students' ability to make significant contributions to society."²² Chiang charges that a new approach to higher education is necessary to be compatible with the betterment of society. The guiding principles should be:

21. Ibid., pp. 59-60.

22. Ibid., p. 61.

- (a) It is the function of colleges and universities to train men and women for service in the various social strata and occupations, and not for the glorification of any particular privileged class.
- (b) In order to carry out the normal duties of instruction and research, colleges and universities should maintain effective liaison with the research bureaus of business and governmental organizations and set up research centers on a co-operative basis.
- (c) In order to furnish social, political, and cultural leadership, colleges and universities should train all-round individuals who are at once capable of efficient service and administration and inspired with a full sense of responsibility and devoted to their duties.²³

An important part of Sun's educational writing, as well as Chiang's, is the place of Adult Education. A summation of their view is expressed by the President when he says, "everybody must continue to receive education all through his life from childhood on."²⁴

Chiang's criticisms of present (c. 1953) educational programs are promotionism, formalism, and isolationism. Promotionism, he declares, "is the way in which subjects in the primary schools are designed to facilitate promotion to the next higher level regardless of the need to prepare them for family membership and occupational endeavor."²⁵

Regarding formalism, he declares that:

colleges and universities should not content themselves with the mere offering of courses and the granting of diplomas to their students upon graduation, for those are only their formal aspects or externals. They should teach their students the art of adapting themselves to the changing social order and equip them with the ability not only to make a living but also to become the architects in the building of a new social order.²⁵

Isolationism he regards as "the separation of classroom instruction from the realities of social life." He feels this is especially true in the teaching of science and he feels that scientists should not separate themselves from the task of building up a new social order.

Chiang places a heavy responsibility upon the nation's educators when he states:

23. Ibid., p. 63

24. Ibid.

25. Ibid., p. 44.

If our educators should fail to make a thoroughgoing study of the problem and carry out radical reforms by purposeful planning, education would not have fulfilled its mission nor discharged its responsibility as the mainspring of social reform.²⁶

If Chiang is the philosophical source for educational policies, the constitution since 1947 has been the legal source.

THE CONSTITUTION AND LAW OF EDUCATION. The constitution of the Republic states in the preamble that the constitution is established "...in accordance with the teachings bequeathed by Dr. Sun Yat-sen in founding the Republic of China...."²⁸

This constitution, coming after the period of centralized control and the period of tutelage, deals specifically with education in Article 21, which states, "The people shall have the right and the duty of receiving citizen's education."²⁹ Chapter XIII, Fundamental National Policies, Section 5, Education and Culture, further defines this article.

Article 158. Education and culture shall aim at the development among the citizens of the national spirit, the spirit of self-government, national morality, good physique, scientific knowledge, and the ability to earn a living.

Article 159. All citizens shall have equal opportunity to receive an education.

Article 160. All children of school age, to wit, those from six to twelve years, shall receive free primary education. Those from poor families shall be supplied with textbooks at the expense of the Government.

All citizens above school age who have not received primary education shall receive supplementary education free of charge and shall likewise be supplied with textbooks at the expense of the Government.

Article 161. The National, provincial, and local governments shall

26. Ibid., p. 46.

27. Adopted by the National Assembly, December 25, 1946, promulgated by the National Government January 1, 1947, and effective from December 25, 1947.

28. The Constitution of the Republic of China, China Yearbook 1959-1960 (Taipei, Taiwan: China Publishing Co., 1960), p. 831.

29. Ibid., p. 833.

create scholarships to assist students of good scholastic standing and of exemplary conduct who lack the means to continue their school education.

Article 162. All public and private educational and cultural institutions throughout the country shall, in accordance with law, be subject to State supervision.

Article 163. The State shall pay due attention to the balanced development of education in different regions and shall promote social education in order to raise the cultural standard of the citizens in general. The National Treasury shall give cash grants to border regions and economically poor areas to help them meet their educational and cultural expenses. The Central Government may itself undertake the more important educational and cultural enterprises in such regions or give them financial assistance.

Article 164. Expenditures for educational programs, scientific studies, and cultural services shall be in respect of the Central Government, not less than 15 per cent of the total national budget; in respect of the provinces, not less than 25 per cent of the total provincial budget; and in respect of the municipalities or haïen, not less than 35 per cent of the total municipal or haïen budget. Educational and cultural foundations established in accordance with the law shall, together with their property, be protected.

Article 165. The State shall safeguard the livelihood of those who work in the fields of education, sciences, and arts and shall, in accordance with the development of the national economy, increase their remuneration from time to time.

Article 166. The State shall encourage scientific discoveries and inventions and shall protect monuments and articles of historical, cultural or artistic value.

Article 167. The State shall give encouragement or subsidies to the following enterprises or individuals.

- (1) Private educational enterprises in the country which have a good record;
- (2) Chinese educational enterprises abroad which have a good record;
- (3) Persons who have made discoveries or inventions in the fields of learning and technology;
- (4) Persons who have rendered long and meritorious services to the cause of education.³⁰

The educational goals as stated in the above articles receive

30. Ibid., pp. 851-852.

varying points of emphasis in practice because of the national emergency.

The implementation of the constitutional articles and the basis for the educational program are found in the Law of Education.³¹ This volume deals with structure as well as a further definition of educational goals as described in Article 158 of the constitution. The section most pertinent to this study, that regarding Vocational Education, states in part:

Vocational schools should cultivate the youth with the knowledge of living and skills of production.

Training they should have includes

1. healthy and sound body
2. develop citizenship and morals
3. cultivate habit of labor
4. teach vocational knowledge and skill
5. promote vocational morals
6. cultivate spirit of creating their own vocation

Junior vocational school: teach youth the elementary knowledge and skill to develop their ability for work in industry.

Senior vocational school: should teach youth more advanced skills to develop their ability in practical production and administration to develop fundamentals for more advanced study.³²

It would appear that the purpose of senior-vocational schools " . . . to develop fundamentals for advanced study" as found in the Law of Education and the current emphasis upon Vocational-Industrial education being "terminal" are contradictory.

To further complicate the Chinese educational picture, when the Nationalist Government retired to Taiwan, they inherited an educational system which had been influenced greatly by the Japanese.

EDUCATION ON TAIWAN. Japan was an enigma to Chinese on the Mainland. She was not only a hated aggressor, in 1895 as well as later, adding to the humiliation of China, but she also served as a respected example of what Asians could do to control their own destiny.

Japan continues to play a dual role in the Republic of China. She is respected for her technological accomplishments, level of living, and modernization as well as feared for her overtures to the Communist regime on the Mainland and ability to outsell Taiwan manufacturing production on the world market.

31. Chiao Yu Fu, Chiao-Yu Fa-Ling, (Taipei, Taiwan: Cheng Chung Shu Chu, August 1955). (Ministry of Education, Law of Education, Cheng Chung Book Co.)

32. Ibid., p. 83.

Although it is not possible to measure the views of the Taiwan Chinese toward Japan, observation indicates that Japan's influence upon the Taiwanese has been considerable.

With the acquisition of Taiwan by Japan in 1895 the Chinese on Taiwan were excluded from a significant fifty year period of Chinese history.

While educational goals on the Mainland of China were developed and implemented as the Republic grew, educational goals for the Chinese on Taiwan were superimposed upon the populace by Japanese colonial administrators. The difference in the educational history of Taiwan and the Mainland is charted in Figure 1.

There is little doubt that educational objectives of the Japanese during the occupation differ greatly from those of the Republic. The degree to which attitudes persist that were transmitted to the Taiwanese by the Japanese education system has not been measured. The present educational objectives, which by law emanate from the Ministry of Education, are made by those who have not experienced "Nipponized education" in Taiwan.

Present educational leaders on Taiwan are cognizant of the Japanese impact upon the people of Taiwan. Taiwan Provincial Commissioner of Education Lin Chen has said,

Taiwan was under the Japanese rule for fifty years. Only ten and so years have elapsed since its restoration to the Republic of China. The so-called "Nipponized education" was enforced during the days of the Japanese occupation. Since its restoration, an educational system based on the Three Peoples' Principles has been carried out in its stead. For this reason, all educational measures adopted have to take into consideration "how to do away with the old" and "how to pave the way for the new."³³

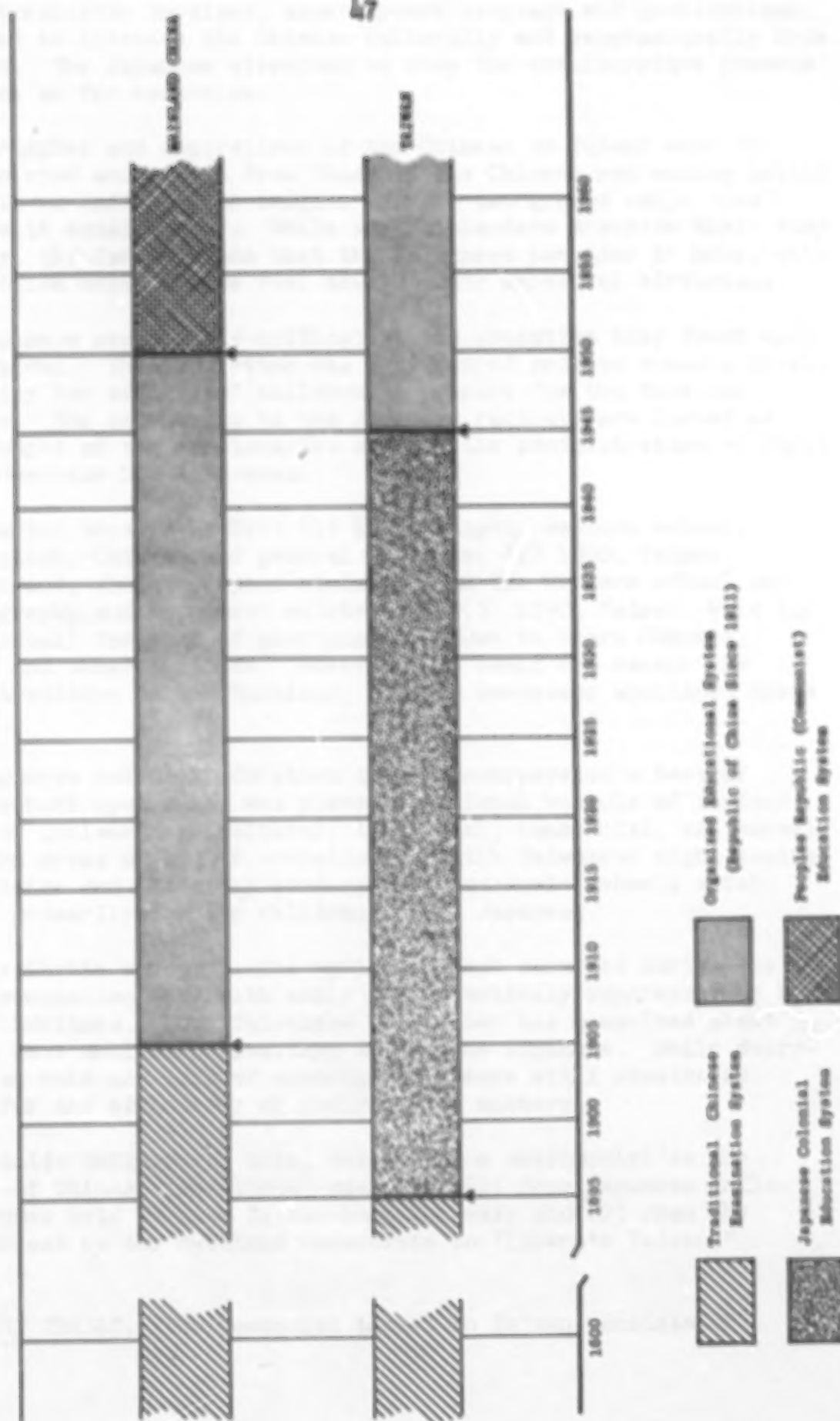
This writer could find no studies by Chinese social scientists which attempted to measure attitudes of the Taiwan-born Chinese either toward their former rulers or toward Mainland Chinese officials. The topic itself appears to be unpopular on Taiwan. It would appear, however, that differences of opinion do exist between the two groups.

The people of Taiwan were not participants in the struggle to found a republic. In essence they were shielded from the conflicts of unification, the Japanese invasion, and the Communist rebellion. Until 1945, for practical purposes, most of the Taiwanese had not heard about

33. Liu Chen, A Report on the Direction for the Future Development of Education in Taiwan to the Second Provincial Assembly (Taiwan: Department of Education, Taiwan Provincial Government, June 7, 1960), p. 2.

FIGURE 1

EDUCATIONAL SYSTEMS, CHINA MAINLAND AND TAIWAN



Sun Yat-sen and the Three Peoples' Principles. The Japanese promptly crushed nationalistic impulses, superimposed language and institutions, and attempted to alienate the Chinese culturally and geographically from the Mainland. The Japanese attempted to stop the enculturative process that had gone on for centuries.

The struggles and aspirations of the Chinese on Taiwan were so different in kind and extent from those of the Chinese now making policy on Taiwan, it is difficult to imagine how the two groups could view objectives with equal fervor. While the Mainlanders describe their stay as temporary, the fact remains that the Taiwanese consider it home, with the same emotion most Chinese feel toward their ancestral birthplace.

The Japanese were highly critical of the education they found upon coming to Taiwan. This education was a system of private schools developed primarily for officials' children to prepare for the Mainland examinations. The exceptions to the Japanese ridicule are listed as (1) the attempts of the missionaries and (2) the administration of first Provincial Governor Liu Ming-chuan.

Liu started three schools: (1) 1887, Taipei, Western school, included English, Chinese and general subjects; (2) 1890, Taipei, Telegraph school, which accepted students from the Western school and taught telegraphy and equipment maintenance; (3) 1890, Taipei, Wild (or Barbarian school) for sons of aborigine children to learn Chinese, literature, and other subjects. However, Liu could not escape the forces for tradition on the Mainland, and his successor abolished these schools.

The Japanese colonial education system incorporated a base of elementary school upon which was placed vocational schools of various kinds. These included agricultural, industrial, commercial, and normal schools. The areas of higher education to which Taiwanese might aspire were in medicine and technical studies. The academic schools established were primarily for the children of the Japanese.

From available accounts, the uprisings that occurred during the fifty year occupation were ruthlessly and effectively suppressed by the Japanese authorities. Some Taiwanese the writer has consulted about this period have ambivalent feelings toward the Japanese. While decrying the harsh rule and lack of opportunity, there still remains an admiration for the efficiency of their former masters.

Two outside influences, then, which may be detrimental to the achievement of Chinese educational goals are (1) from Japanese influenced attitudes held by some Taiwan-born Chinese; and (2) from the outspoken threat by the Mainland Communists to "liberate Taiwan."

THE COMMUNIST THREAT. The Communist threat to Taiwan consists of

military action directed at the offshore islands (particularly Kinmen) and a promise to invade the Province in order to unify China.

The purpose of the Republic's goals of recovering the Mainland is to stop the Communists from destroying traditional Chinese cultural values and to enable them to bring a government based upon the Three Peoples' Principles to the entire nation.

The goals and aspirations of the Chinese people are officially interpreted through organs of the central government. Uppermost in the minds of the leaders, since losing control of the Mainland in 1949, have been the Communist rebellion and the sacred task of recovering the Mainland. This objective is reflected in most policy statements concerning education and economic development. For example, Taiwan Provincial Commissioner of Education Liu Chen has said:

Taiwan is the base for counterattack against the Mainland and National Recovery. The role which education plays is to train personnel needed not only for various constructions of the province but also for national reconstruction after the recovery of the Mainland. Besides, the whole country is on the brink of war. Therefore, all measures taken on education must coordinate with the requirements of the general mobilization, thus building up the strength for an "all-out" war. Thus, under the double-barrelled demand for "regularity" and "change," a thorough and careful plan has to be laid out for all levels of education.³⁴

The effect of the Communist threat upon educational goals is evident at all levels in the schools. The curriculum reflects this Communist threat, both as a rationale for studying science and perpetuating traditional Chinese culture, as well as more directly in civics, scouting, and military training.

As we have noted, then, the goals of education for the Republic of China are officially stated in the constitution. These goals attempt to accommodate traditional Chinese concepts of ethics (transmitted by Confucius and his disciples) with the need for modern technology (brought into China by "Western" nations and Japan).

Sun Yat-sen has held a predominant position as the formulator of goals since the birth of the Republic. A generalized statement (from Sun's elaboration upon the Three Peoples' Principles) of educational goals would include development of moral qualities in the individual, perpetuation of Chinese values; vocational education, reconstruction of the nation; military training, protection of the nation; and

34. Liu Chen, A Report on the Direction for the Future Development of Education in Taiwan to the Second Provincial Assembly (Taiwan: Department of Education, Taiwan Provincial Government, June 7, 1960), p. 2.

aesthetic appreciation to enrich the life of the individual. Essentially these goals have not been changed since Sun Yat-sen formulated them, although they have been expanded by Chiang Kai-shek.

The Communist takeover of the Mainland has not changed the goals but has postponed their application for development of the Mainland of China. Thus, in order to carry out faithfully the Republic's goals, the recovery of the Mainland takes precedence over all other considerations.

Pertinent to this study is the degree to which discrepancies may exist between (1) statement of goals and implementation by government agencies and (2) statements of goals by officials and goals of the populace. An overview of the Taiwan-born Chinese has been given in an attempt to shed light on this latter point. To examine the first point necessitates an examination of the governmental structures formed to implement the achievement of educational goals.

ORGANIZATION, STRUCTURE, AND RELATIONSHIPS OF THE NATIONAL SCHOOL SYSTEM. As has been indicated earlier in this section, no national school organization existed in China until the abolition of the examination system in 1905. However, after the Boxer Rebellion in 1901 the reformers pointed to the necessity for an educational organization. In that year, the Chief of Education Affairs was officially named, concurrently to be President of the Capital Grand School.

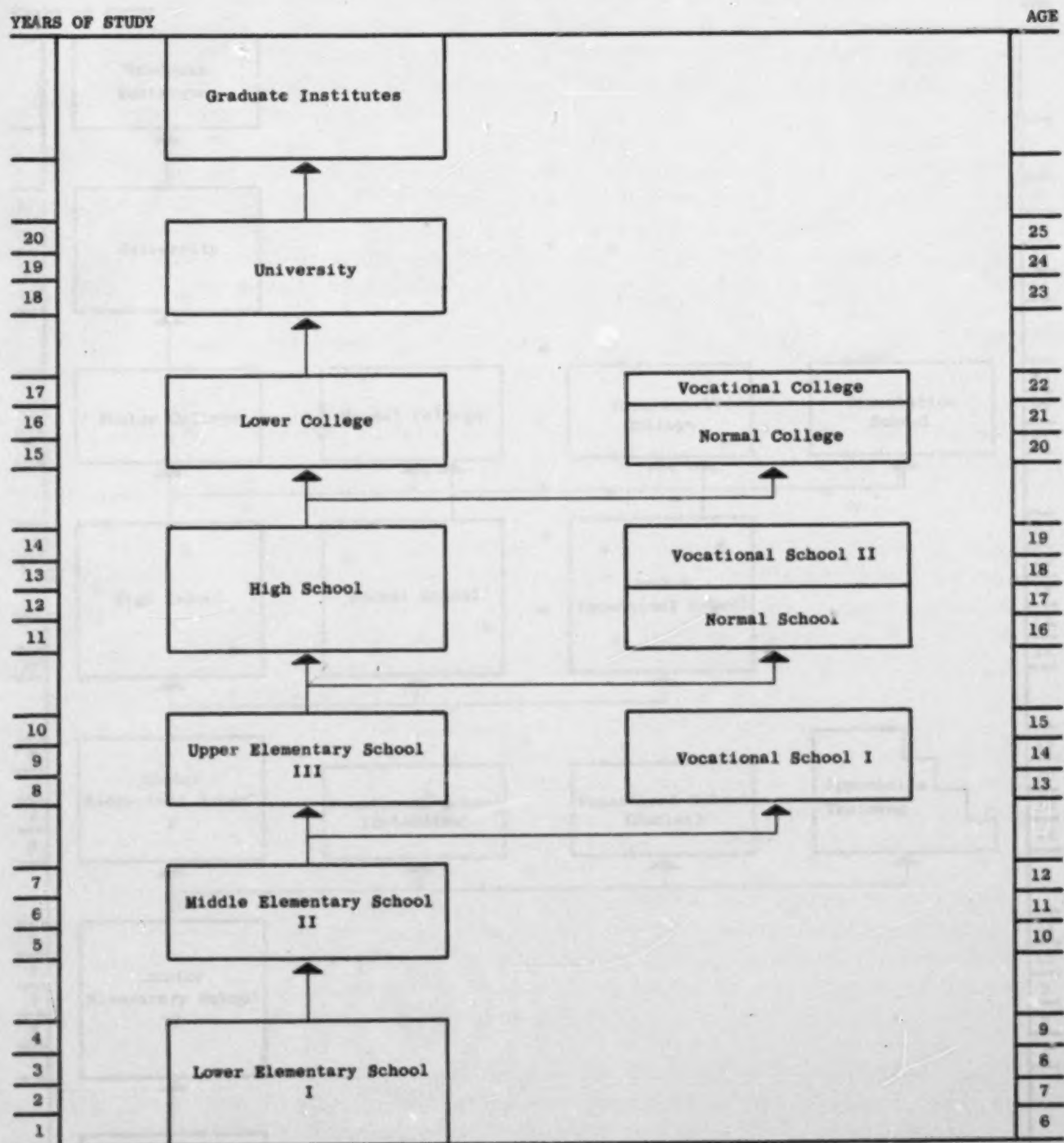
It was in 1902 that the first organization structure was adopted. This organization combined the Capital Grand School and the National Education Office. The functions were twofold: (1) to provide an institution for higher education and (2) to establish the highest national educational office. Additionally, a three-level system of elementary, secondary, and higher schools was established. Courses were initiated at the secondary and higher levels in such subjects as agriculture, mining, engineering, and commerce. Suggestions were also included for effective teaching procedures and laboratory equipment and facilities.

This three-level system included seven steps (see Figure 2). Children were to start school at age six. Apart from the academic track there were provisions for vocational schools of three levels: elementary, secondary, and senior; and for teacher training schools.

The vocational schools were established to give educational opportunity to those students who chose vocational training or who failed the examination to enter the next level of academic schooling.

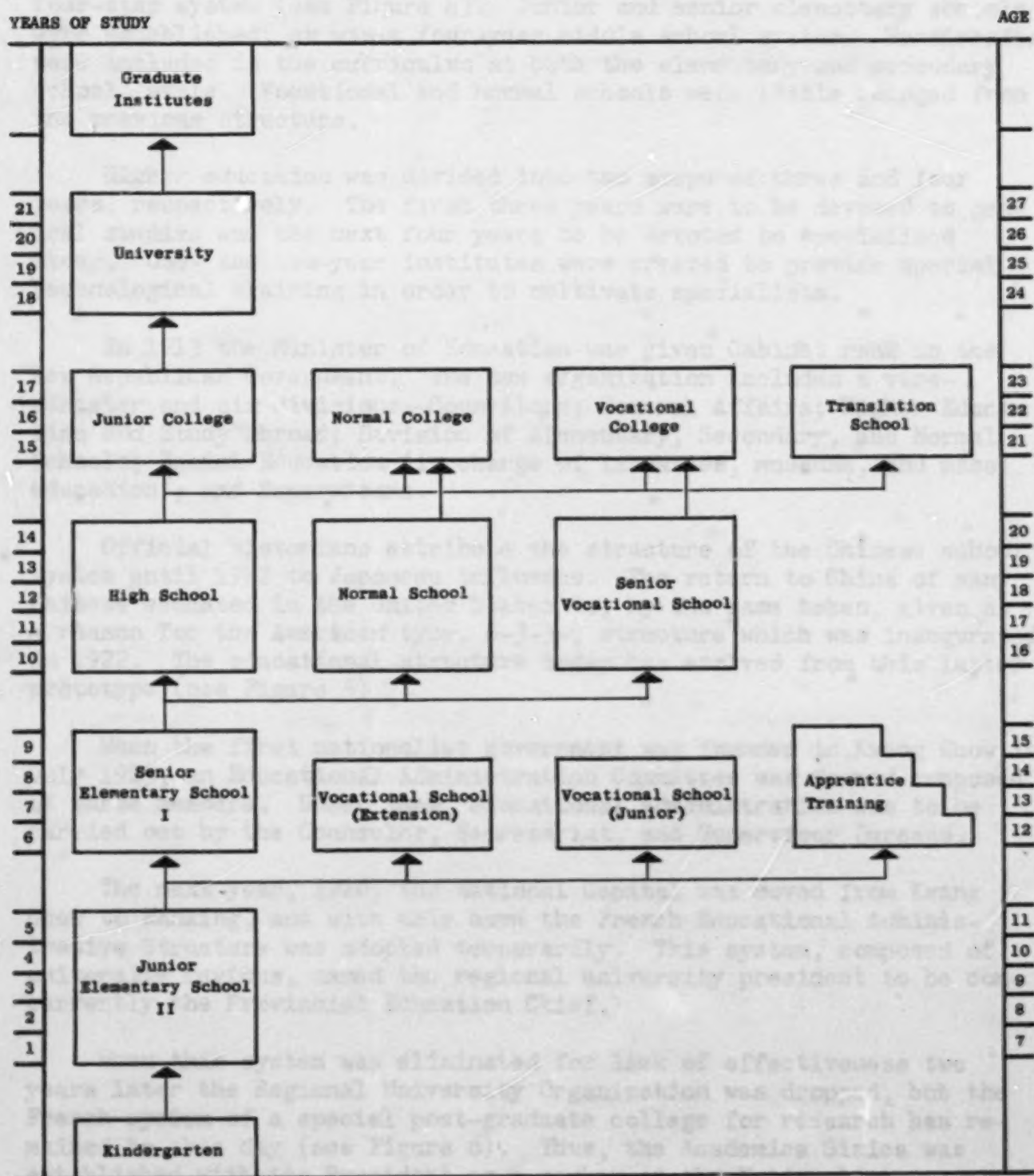
Another structure was proclaimed in 1903 (see Figure 3), under which, for the first time, provisions were made for the education of females. The three-level, ten-year elementary school was changed to a two-level, nine-year system. Other changes included separation of

FIGURE 2
EDUCATIONAL SYSTEM IN CHINA, 1902^a



^aWang Feng-Chien, *Chung Kuo Chiao Yu Shih* (Taipei, Taiwan: Chung Shu Chu, 1959), 6th ed. (A Chinese Education History, Cheng Chung Book Co.)

FIGURE 3

EDUCATIONAL SYSTEM IN CHINA, 1903^a^aWang Feng-Chien, p. 288.

normal school from vocational schools and the addition of extension and apprentice vocational training. The edict abolishing the examination system officially endorsed the new educational structure in 1905.

The National Department of Education was changed into the Ministry of Education in April 1912, and an educational conference was called in July of that year to develop national educational goals and objectives. Following this conference, a new structure was ordained--a three-level, four-step system (see Figure 4). Junior and senior elementary schools were established, as was a four-year middle school system. Handicrafts were included in the curriculum at both the elementary and secondary school levels. Vocational and normal schools were little changed from the previous structure.

Higher education was divided into two steps of three and four years, respectively. The first three years were to be devoted to general studies and the next four years to be devoted to specialized study. One- and two-year institutes were created to provide special technological training in order to cultivate specialists.

In 1913 the Minister of Education was given Cabinet rank in the new Republican Government. The new organization included a vice-minister and six divisions--Councilors; General Affairs; Higher Education and Study Abroad; Division of Elementary, Secondary, and Normal Schools; Social Education (in charge of libraries, museums, and mass education); and Supervisors.

Official historians attribute the structure of the Chinese school system until 1922 to Japanese influence. The return to China of many Chinese educated in the United States is, by the same token, given as a reason for the American type, 6-3-3-, structure which was inaugurated in 1922. The educational structure today has evolved from this latter prototype (see Figure 5).

When the first nationalist government was founded in Kwang Chow in July 1925, an Educational Administration Committee was formed composed of three members. Under them, educational administration was to be carried out by the Counselor, Secretariat, and Supervisor Bureaus.

The next year, 1926, the National Capital was moved from Kwang Chow to Nanking, and with this move the French Educational Administrative Structure was adopted temporarily. This system, composed of university regions, named the regional university president to be concurrently the Provincial Education Chief.

When this system was eliminated for lack of effectiveness two years later the Regional University Organization was dropped, but the French system of a special post-graduate college for research has remained to this day (see Figure 6). Thus, the Academia Sinica was established with its President as a member of the Nationalist

FIGURE 4

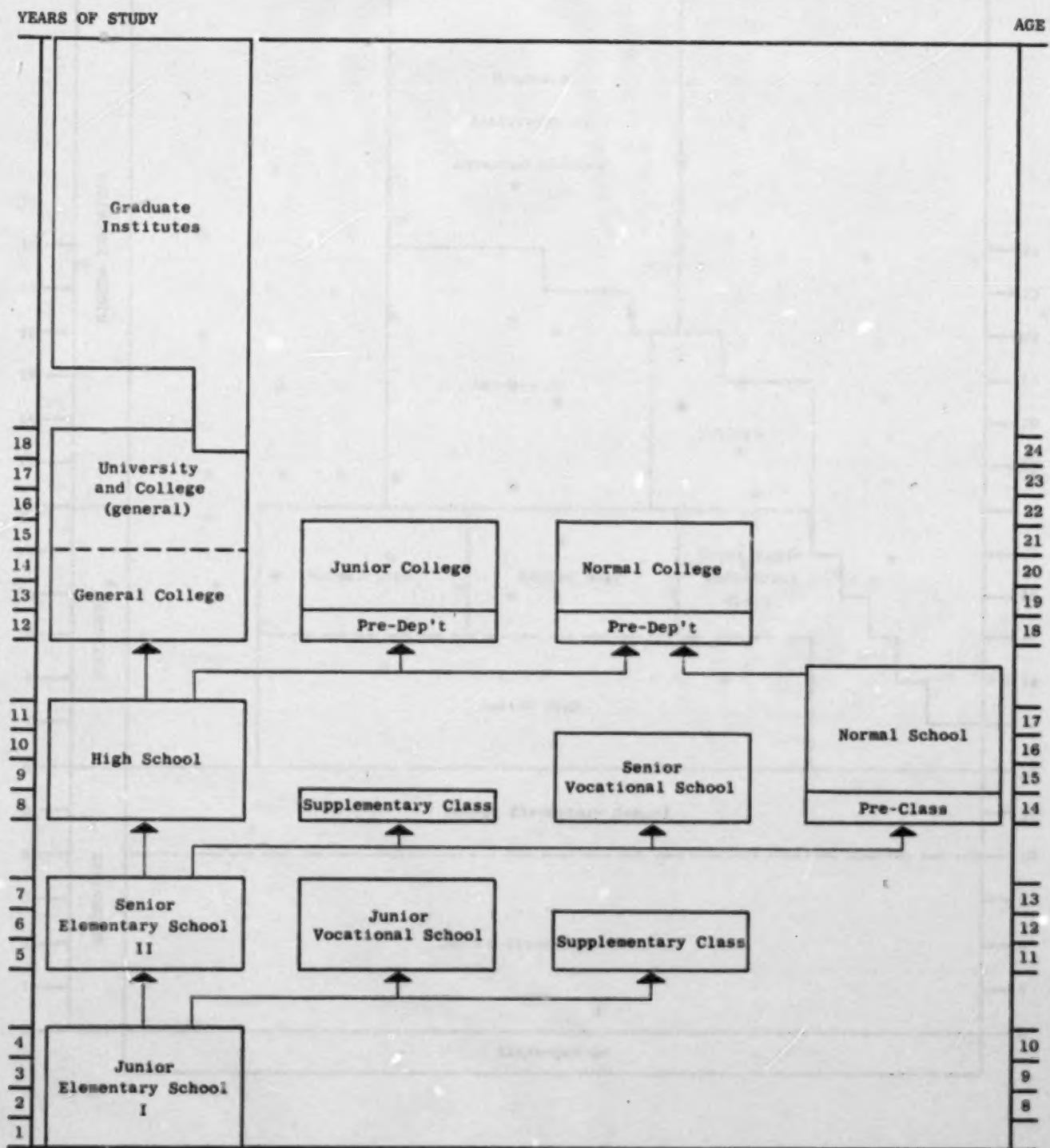
EDUCATIONAL SYSTEM OF THE REPUBLIC OF CHINA IN 1912^a^aWang Feng-Chien, p. 297.

FIGURE 5

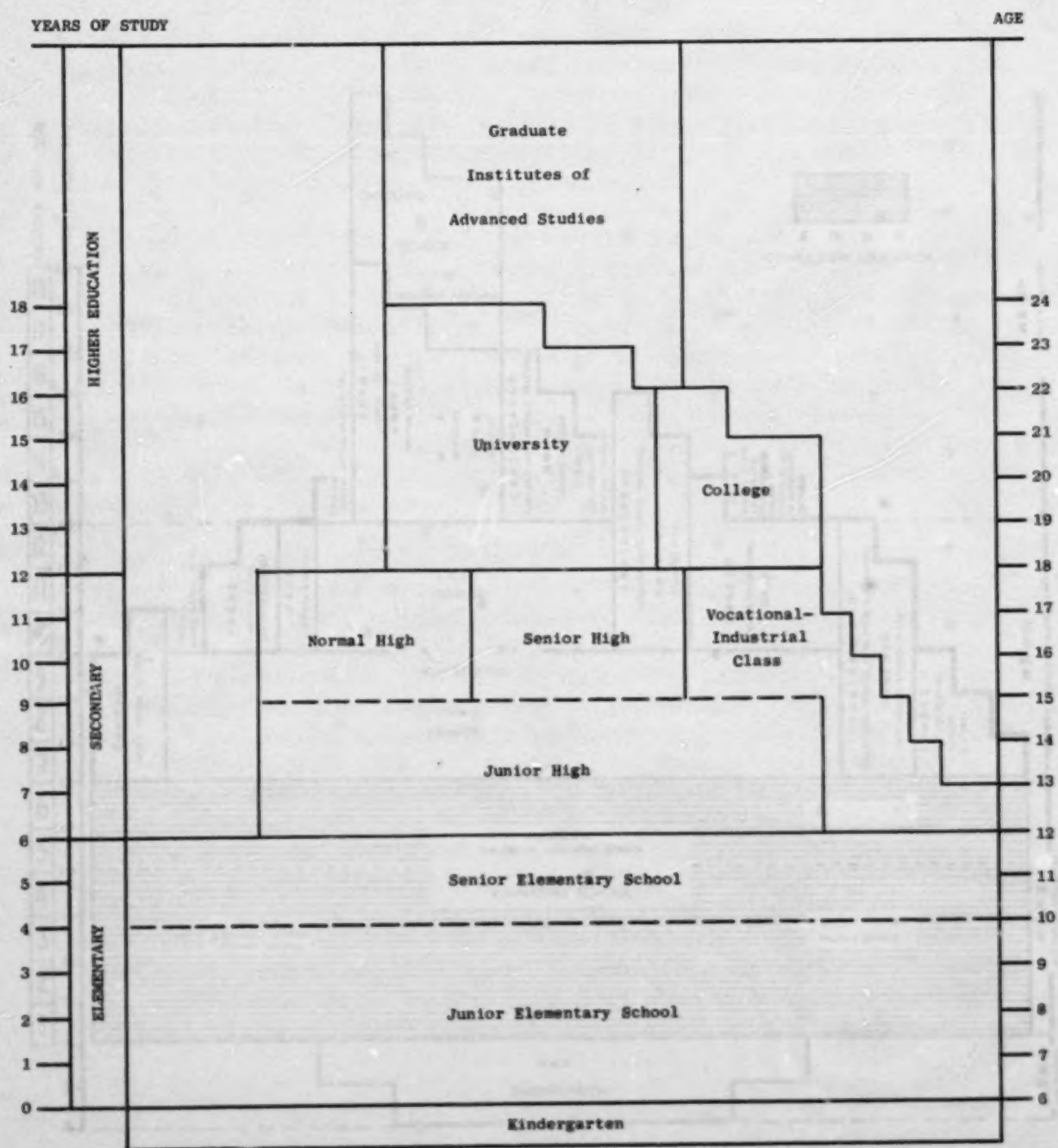
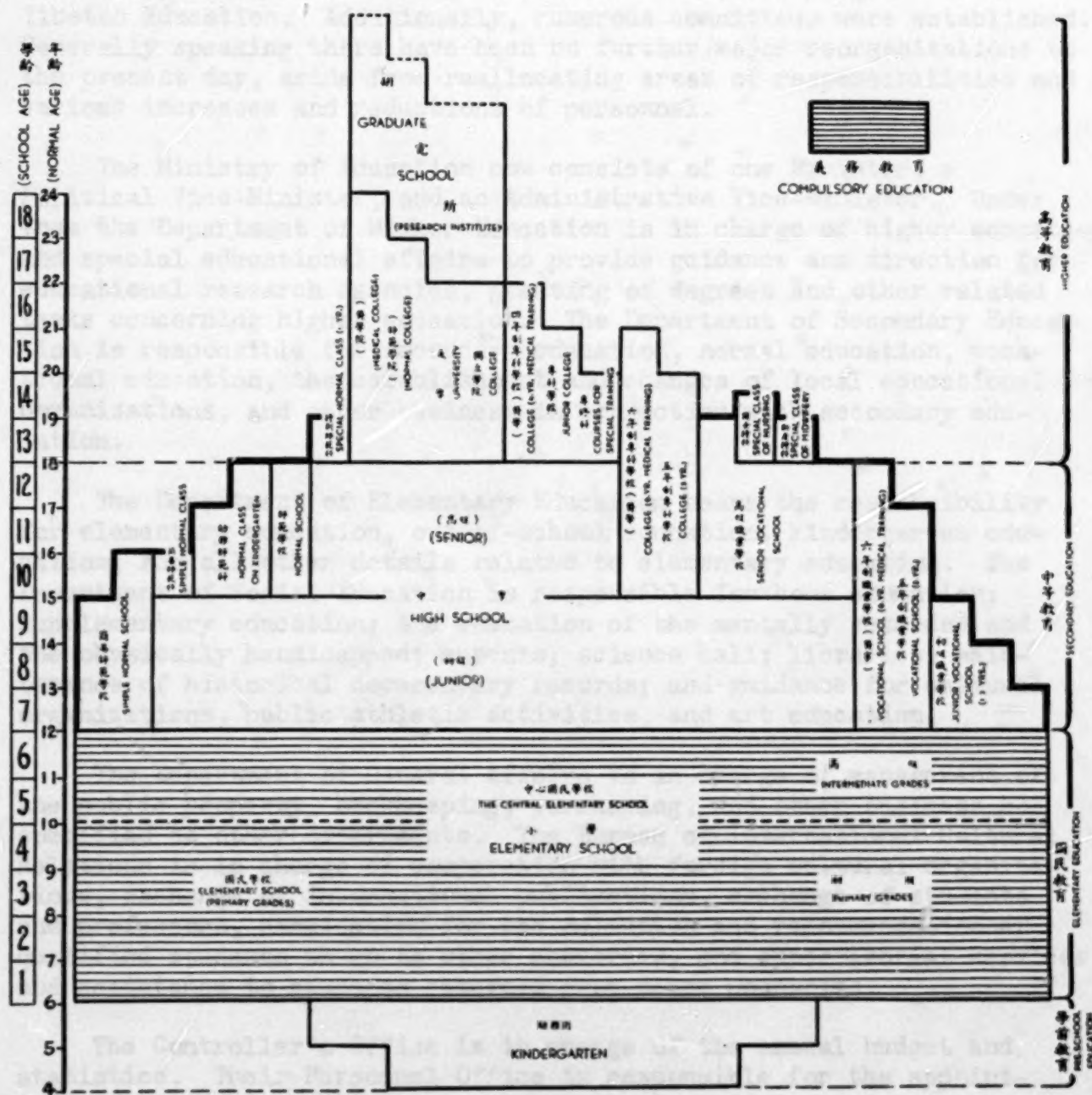
EDUCATIONAL SYSTEM OF CHINA, 1922^a^aWang Feng-Chien, p. 304.

FIGURE 6

EDUCATIONAL SYSTEM OF THE REPUBLIC OF CHINA, 1961^a

^aMinistry of Education, Education in the Republic of China (Taiwan, 1960), p. 11.

Government. The Academia Sinica was made a separate entity independent of the Ministry of Education with the Government Reorganization of 1928.

A major central governmental reorganization also occurred in 1928 when the five government divisions (yuans) of Dr. Sun Yat-sen were created. In October, 1929, the Ministry of Education was re-established under the Executive Yuan.

The five departments established were: General Affairs, Higher Education, General Education, Social Education, and Mongolian and Tibetan Education. Additionally, numerous committees were established. Generally speaking there have been no further major reorganizations to the present day, aside from reallocating areas of responsibilities and various increases and reductions of personnel.

The Ministry of Education now consists of one Minister, a Political Vice-Minister, and an Administrative Vice-Minister. Under them the Department of Higher Education is in charge of higher education and special educational affairs to provide guidance and direction for educational research agencies, granting of degrees and other related tasks concerning higher education. The Department of Secondary Education is responsible for secondary education, normal education, vocational education, the establishment and changes of local educational organizations, and other business in connection with secondary education.

The Department of Elementary Education bears the responsibility for elementary education, out-of-school education, kindergarten education, and all other details related to elementary education. The Department of Social Education is responsible for home education; supplementary education; the education of the mentally retarded and the physically handicapped; museums; science hall; libraries; maintenance of historical documentary records; and guidance for cultural organizations, public athletic activities, and art education.

The Department of General Affairs is in charge of management of the public property, bookkeeping, purchasing, and other business not specified to other departments. The Bureau of International Cultural Relations is in charge of cooperation with foreign cultural organizations, exchange of international publications, exchange of students and professors, examination for the selection and recommendation of qualified students to go to other countries, and supervisorial services and assistance to students returned from other countries.

The Controller's Office is in charge of the annual budget and statistics. Their Personnel Office is responsible for the appointment, dismissal, registration, promotion, transfer, award, punishment, evaluation of Ministry personnel, and recruitment of special educators and writers. It is also responsible for the retirement, pension,

welfare, distribution of rations, and the registration of scholars and educators.

The International Cooperation office is in charge of United States aided educational projects. In addition, several councils and committees have been established to cooperate with other government agencies.

The Guidance Committee for Students Educated Abroad, consisting of eleven members, is also a branch of the Executive Yuan with the Minister of Education concurrently the chairman. There are three sections under the Committee, each charged as follows: (1) responsible for the investigation and survey of the needs of specialists in various institutions and organizations; (2) responsible for the recommendations, distribution, and placement of returned students; and (3) responsible for managing housing, salary, and related tasks concerned with returned students.

Under the Minister of Education and his two Vice-Ministers are twelve councils and committees which collaborate with the departments to carry out their respective responsibilities.³⁵

The most important organization related to this study is the Committee for Promoting Cooperation between Education and Industry. This committee was approved by the Executive Yuan on March 12, 1955. The Minister of Education is the Chairman of the Committee. Deputy Chairmen are the Vice-Ministers of Economic Affairs and the Vice-Ministers of the Communication and Transportation Ministries. There are 35-50 members from industry and education selected by the Minister of Education. The Ministries of National Defense, Finance, and Personnel are also represented. The functions of this committee are: (1) to plan cooperative national education and industry programs; (2) to coordinate efforts between agricultural and engineering colleges, institutes, and vocational schools with industry; (3) to make recommendations for the improvement of vocational education; and (4) to make recommendations for the improvement of industry.

PROVINCIAL DEPARTMENT OF EDUCATION. The establishment of the Provincial Department of Education closely followed organization of education at the national level under the Republic. However, the autonomy and variety of local government structure in the early years of the Republic delayed formation of the department as we know it today. It was on September 9, 1917, that the National Ministry of Education proclaimed that the Provincial Department of Education should be directly under

35. For a listing of the major councils and their responsibilities, see the original study, Education as an Instrument of National Policy for Economic Growth in the Republic of China, available from University Microfilms, Inc., Ann Arbor, Michigan.

the jurisdiction of the Ministry of Education.

However, it was not until April, 1944, that regulations for Provincial Governments were officially issued from the Central Government. At that time the responsibilities of the Provincial Department of Education were stated, covering aspects of public schools; social education; supervision of schools and academic organizations; design, maintenance, and management of libraries, museums, and athletic fields; and school administration and finance.

Since this time there has been no major change in the structure of the Provincial Department of Education within the Republic of China.

On Taiwan a Department of Education under the National Government took over administration of the schools from the Bureau of Education of the Imperial Japanese Colonial Governor's office in 1945.

The Provincial Department of Education took on this administration with the reinauguration of the Taiwan Provincial Government in April 1947.

The department was reorganized in May 1955, and the following structure was established:

1. A Commissioner and Deputy Commissioner are in charge of all educational affairs at the provincial level.
2. The Secretariat is to be in charge of all correspondence and compilation of reports.
3. Six sections are established to be responsible for various aspects of education:
 - a. The first section--higher education, examinations, and training programs.
 - b. The second section--administration of provincial middle schools and private middle schools of the province, city, and county.
 - c. The third section--provincial and private vocational schools.
 - d. The fourth section--normal schools, elementary schools, and city and county educational administration.
 - e. The fifth section--audio-visual education, supplementary, and mass education.
 - f. The sixth section--official seals, documents, purchasing,

and maintenance of public property.

4. Supervisor's office for school inspection.
5. The Controller's office deals with budgets and accounting.
6. The Personnel office is responsible for awards, punishment, drafting rules and regulations on personnel, appointments, dismissal, salary, retirement, pensions, personnel registration, and teacher welfare.
7. A Board of Registration and Certification of secondary school teachers and a Board of Registration and Certification of elementary school teachers. These two boards are also in charge of recruitment.
8. A Business Inspection Office has responsibility for supervision of financial and operational matters.
9. Five special committees are established to deal with special projects. They are a Health Education Committee, the Committee for Advancement of Student National Language, the Educational Research Committee, the Administrative Committee of Educational Reconstruction Fund, and the Educational Forest Supervision Committee.

There are 16 county offices of education on Taiwan under the jurisdiction of the county magistrates; four municipalities, under a city mayor; and an Administrative District, under a director. Each of these offices has an elementary school section, a secondary school section, and a social education section.

As we have seen, it was not until 1917, five years after the creation of the national Ministry of Education, that a provincial education structure was provided for in the national education plan. The responsibilities of the provincial departments were not actually defined until 1944. This leads to a supposition that many of the structures were organized on paper only and did not exist in practice.

However, implementation has been carried out since the Nationalist Government moved to Taiwan Province in 1949. Since that time new committees have been organized at the national and provincial levels to complement one another. Despite this fact, Chinese leaders have stated that education has not met fully its responsibilities for national reconstruction. One reason for this feeling on the part of some leaders may be that the overriding importance of returning to the Mainland has tended to create ambivalence about what policies are best for Taiwan now. Certainly, different educational strategies would prevail for supplying the cadres of skilled manpower solely for Taiwan than those needed to meet the manpower requirements for reconstruction of the

China Mainland.

Another factor influencing statements regarding success or failure of the educational system to create within individuals needed skills and attitudes might be the relatively short amount of available funds remaining after military requirements and other governmental costs are met.

Yet another factor influencing the questionable success is cultural. Traditionally, in the Chinese culture, societal rewards are given to those with classical education. While the government may have placed emphasis on the skills which vocational education could provide, the people continue to think of education in traditional terms.

This contradiction between educational goals of the government and the goals of the people has complicated the role which vocational education has played within the educational structure.

The purpose of this study was to determine the extent to which the educational system in the Republic of China has been able to meet the needs of the country for skilled workers. The study was conducted in the form of a survey of the educational system in the Republic of China, with particular emphasis on the vocational education system. The study was conducted in the form of a survey of the educational system in the Republic of China, with particular emphasis on the vocational education system.

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These purposes were established as an attempt to train the skilled workers needed for the industrialization of China which Sun Yat-sen believed to be necessary.

More recently Chiang Kai-shek has elaborated on this need for industrialization, recognizing that economic development cannot be achieved until the need to increase vocational education. A heavy responsibility is assigned by the Ministry of Education to the vocational-technical schools to provide the trained cadres of skilled workers considered necessary for economic development. The primary emphasis has continued to emphasize vocational-technical education as an integral and essential element in economic development plans.

The Vocational Education Law of 1922 had some good stipulations designed to implement the vocational education system. Despite these efforts, the outbreak of the war with Japan in 1937 revealed a continued need for more skilled workers. This shortage prompted government

THE ROLE OF VOCATIONAL-INDUSTRIAL EDUCATION FOR ECONOMIC DEVELOPMENT

A system of vocational schools was first included in a plan for all school organization in 1902. Through the years various types of vocational schools have been established and these schools are referred to generally as comprising vocational education.

Vocational schools are herein defined as those secondary (middle) schools which attempt to educate skilled workers. The types of established vocational schools at the present time are: Vocational-Agricultural (V-A), Vocational-Commercial (V-C), Vocational-Fishery (sometimes called Vocational-Maritime), Vocational-Home Economics, Vocational-Industrial (V-I), Vocational-Nursing and Midwifery, and others.

For the purposes of this study, references to skilled workers refer to those educated in the vocational-industrial schools, since industrial leaders may refer to workers at various levels of technical proficiency as "skilled." To avoid ambiguity, this study limits "skilled workers" to those at the level of proficiency provided by vocational-industrial schooling.

The purposes of vocational education as defined in the Vocational Education Law of 1932 were training for health, training for good citizenship, respect for the dignity of labor (literally, cultivation of the laboring habit), training for vocational skill and knowledge, cultivation of the spirit of service, and cultivation of the creative spirit.

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legislation in 1942 which included registration of skilled workers and in some cases, their exemption from conscription. This legislation was followed in 1944 by the Ministry's "Plan for the Future Development of Secondary Vocational Education and Training Middle Level Technicians." Hence, there had been recognition of the need for vocational education and some attempts to implement the system before the Chinese Nationalist Government withdrew to Taiwan.

After the nationalist government withdrew to Taiwan in 1949, increased attention was devoted to vocational education. In 1953 the Ministry of Education called a vocational education conference which was held at the newly established Department of Vocational Education of the Taiwan Provincial Normal University. At the conference Premier Chen Cheng stated:

The defects of past education have been the separation of school education and community needs and unemployment of school graduates. Education has to meet the needs of the nation and the community and it has to be carried out systematically and purposefully. In other words, education must cooperate with industry closely. By doing so, the progress of education and the prosperity of Industry can be attained. In the past, individualism has been deeply rooted in China, therefore, a selfish psychology has been formed. I do sincerely hope that we can break this self-centered philosophy and cooperate with each other. The major purpose of this conference is to try to speed cooperation between education and industry so as to improve the function of education.¹

One result of the conference was the formation of a Committee for School-Industry Cooperation which gave impetus to such cooperation, but which, thus far, appears to be limited in scope, according to the 1960 Vocational-Industrial School Principals' Conference Report.²

A second result was incorporation into law of "A Plan of Promoting Cooperation between Education and Industry," issued by the Ministry of Education in May, 1954.

It can be seen that school-industry cooperation programs have been started since the 1953 conference. In the seven years subsequent to the conference only a small number (45) of the 3,285 industrial establishments have been involved in cooperative programs with five of the 23 vocational-industrial schools. Only one of these five schools

1. Ti Saa Tzu Chung Kuo Chiao Yu Nien Chien (Chinese Education Year Book), Vol. I, p. 345.
2. Taiwan Sheng Chia Yu Ting, "Kung Yeh Chih Yeh Hsueh Hsiao Hsiao Chang Hui I Pao Kao," 1960. (Taipei Municipal V-I School, "Vocational-Industrial School Conference Reports.") Unnumbered. (Mimeographed.)

(Kaohsiung) has cooperative programs with private industrial establishments. The percentage of students involved compared to total senior vocational-industrial school enrollment is correspondingly small (2.7%).

Another result of the 1953 Conference was a joint Chinese-United States project to improve vocational-industrial education. For this project, which has continued through 1961, 8 of the 23 vocational-industrial schools were selected for aid. Their program was changed into a unit-trade curriculum, that is, one where a student undertakes an extensive study of skills and operations connected with one trade. New equipment and buildings were supplied.

Prior to this project all vocational-industrial schools had been organized on a subject area basis, teaching such courses as chemical analysis, junior civil engineering, industrial chemistry, mining and metallurgy, junior mechanical engineering, mechanical drawing, junior textile engineering, fashion design, forestry, and various handicraft courses. These schools had been criticized by Chinese and American vocational educators alike.

The new program, largely financed with United States funds, set up unit-trade courses for ten occupations: auto-mechanics, carpenters, electricians, electronic equipment repair, foundrymen, machinists, plumbers, printers, sheet-metal workers, and welders.

Teacher training facilities in the Vocational-Industrial Department of Taiwan Provincial Normal University have also been included in the new program. These facilities, developed under a Pennsylvania State College-ICA contract, offer a four-year Bachelor of Education degree to prepare teachers for subjects in vocational schools and also a special one-year course to enable journeymen from industry to earn a certificate to teach their trade in a vocational school.

Other activities of note have been the vocational education curriculum library started in 1957, the founding of the Chinese Vocational-Industrial Education Association in 1958, and annual island-wide vocational-industrial school students' skill contests.

Although various claims have been made as to the success of the unit-trade program, both by Chinese and American educators, the writer could obtain no data from industry verifying these judgments. However, statistics do indicate an increasing enrollment in vocational schools.

Even though vocational education had increased during the Japanese War (1937-1945) and has continued to increase since 1954, a comparison between the ratio of students enrolled in vocational-industrial schools and the ratio of students enrolled in academic middle schools during these two periods indicates a decrease of proportionate enrollments in each period.

As educational facilities are expanded, academic school facilities increase at a faster pace than vocational-industrial schools, despite statements by leaders emphasizing an increasing role for the vocational-industrial schools.

In consideration of the emphasis given by leaders to the importance of vocational-industrial education for achieving industrialization goals, we might expect to see a priority given to vocational-industrial schools. However, senior vocational-industrial schools account for only 13.9% of the total vocational school enrollment. If junior and senior vocational school enrollments are indicative of actual priority allocation, we find commercial schools holding the first priority (45.94%), agriculture schools second (33.78%), and industrial schools third (19.65%).

As an illustration of this discrepancy between economic targets and specific vocational school enrollments, the fishing industry is a primary target for the Third Four-Year Plan. Yet the Junior and Senior Vocational-Maritime schools combined have enrolled only 2.23% of the vocational students.

Some educators have said that much progress has been made toward insuring that vocational education will contribute to the achievement of national goals of economic development. Changes in curriculum and time allocated to shop practice are given as instrumental reasons why industry welcomes graduates and job placement is no longer a problem. Although it is persuasive that these leaders have truly interpreted this situation, little objective data could be offered by them in order for the researcher to corroborate their views.

Since no research had been done to determine the degree to which the vocational schools are helping to further economic development, three surveys were conducted by the author to throw light on this question. The surveys include students and graduates of the new unit-trade vocational-industrial schools as well as representatives of various industrial establishments on Taiwan.

THE SURVEYS

The need for systematic studies of the problem became apparent to the writer as the result of visits to schools and industries and discussions with students, educators, workers, and industrialists. In an attempt to collect objective data the writer undertook three separate but complementary surveys: (1) The Vocational-Industrial School Students Survey, (2) The Vocational-Industrial School Graduates Survey, and (3) The Factory Skilled Worker Force Survey.

These surveys were designed to enable the writer and others concerned with the achievement of the Republic's goals to recommend policy, programs and hypotheses with perhaps more validity than formerly.

Student Survey. The fact that vocational-industrial school enrollments have risen has been interpreted by many American and Chinese educators on Taiwan as a reflection of many students' desire to become skilled workers in order to enter the labor force. However, the reader will recall that most Chinese view education as the scholarly pursuit of academic learning. What, then, are the reasons for increased numbers of students selecting to enter a terminal, vocational-industrial school? Are these students planning on taking their place in industry with less desire for further study in higher education? If this be so, what factors have influenced their choice?

Objectives. The objectives of the survey of vocational-industrial school students were: (1) to identify some factors influencing students' choice of unit-trade vocational-industrial schools, (2) to ascertain reasons for students' choice of vocational-industrial schools in relation to other secondary schools, (3) to identify the number of students who considered their vocational-industrial school education to be terminal in nature, (4) to determine whether academic junior middle schools are the main source for senior vocational-industrial school students, and (5) to compare findings for a vocational-industrial school located in an industrial-urban setting with findings for a rural area having industries.

Nature of the Sample. A non-probability purposive sample of two vocational-industrial schools was selected from a possibility of eight schools which employ the unit-trade curriculum. The following criteria were used as the basis for selection: (1) schools must include senior departments; (2) one school must be located in an industrial-urban area, and one school must be located in a rural area having industries; and (3) schools must be of the unit-trade curriculum with a variety of unit-trades represented.

Based upon the foregoing criteria, the Taipei Municipal Senior Vocational-Industrial School, located in Taipei City, and the Hsinchu Provincial Senior Vocational-Industrial School, located in Hsinchu County, were selected.

A total of 898 students were included in the survey: 311 attending the Hsinchu Provincial Vocational-Industrial School, and 587 attending the Taipei Municipal Vocational-Industrial School. Returns on this survey were 898 (100%). Results were stratified by school, school year, and unit-trade.

Procedures. The following survey form was developed with the cooperation of representatives from the Vocational-Industrial Education Department of the Taiwan Provincial Normal University:

SURVEY FORM FOR STUDENTS OF TAIPEI MUNICIPAL
SENIOR VOCATIONAL-INDUSTRIAL SCHOOL AND
TAIWAN PROVINCIAL SENIOR VOCATIONAL INDUSTRIAL SCHOOL

Name _____ Age _____ School _____
Unit-Trade _____ Year in School _____
Graduated from _____ Jr. Middle School

Senior middle school entrance examinations I took prior to my present vocational-industrial entrance examination:

- | | |
|-----|-----|
| (1) | (2) |
| (3) | (4) |

Major influence for me to attend vocational-industrial school was from:

Check one: ☐ School ☐ Parents
 ☐ Friend ☐ Self

After graduation I intend to take the United College Entrance Examination:

Check one: ☐ Yes ☐ No

Conferences were held with the Taipei Municipal Bureau of Education, The Taiwan Provincial Department of Education, and the administrators and teachers of the two selected vocational-industrial schools to determine procedures for conducting the survey. The writer was introduced to each classroom teacher and his class and given an opportunity to

explain the purpose of the survey. A questionnaire was distributed to the students in each class, filled out while the class was in session, and collected by the writer. The findings were translated and tabulated by the writer with the assistance of personnel from the Vocational Education Department of the Taiwan Provincial Normal University.

Data Analysis and Tabulation. A student taking an entrance examination for a vocational-industrial school states his choices as to unit-trades. Then, depending upon his rank order on the entrance examination and available facilities, the school authorities assign him to a unit-trade course.

The Taipei Vocational-Industrial School has six such unit-trades: electrician, machinist, electronics, auto-mechanics, printing, and welding--the latter inaugurated in 1960. Hsinchu has four unit-trades: machinist, carpentry, sheet-metal, and electrician--the latter also started in 1960. In the case of the two new units, only one year's figures are available.

The urban Taipei Vocational-Industrial School has a larger enrollment (587) than the rural Hsinchu Vocational-Industrial School (311). If size of enrollments by unit-trades are indicative of the priority for skilled-worker needs, the following rank order for workers would be: machinist, printer, auto-mechanic, electrician, electronic worker, and welder (first year only) for the Taipei school; and machinist, sheet metal worker, electronics worker, carpenter, and welder.

Item I--Choice of School. Students were asked to choose among four factors which may have influenced their decision to attend vocational-industrial school--parents, friends, school, and self. Nineteen and three-tenths percent of the students did not respond to any of these factors, while 41.5% indicated parents; 9.7%, friends; 3.8%, school; and 25.7%, self.

Factors influencing students choices differ between urban (Taipei) and rural (Hsinchu) students. The parents are the dominant factor influencing choice in both areas (parents in the city [44.4%] and in the rural setting [36.0%]). The student (self) influence is less a factor in the city (15.2%) than in the rural school (45.7%). The influence of friends is small in both city (8.5%) and rural area (9.7%). In both areas schools appear to have little influence on decisions to attend a vocational-industrial school (3.1% in Taipei and 5.1% in Hsinchu).

Prior to data analysis one might logically assume that rural students would be more dependent upon their parents for decisions, and less upon themselves than city youngsters. This assumption might be made because of the traditional belief that the extended family setting

finds its strongest ties in the rural areas, and is less dominant in a nuclear urban setting. The findings reported here may cause us to re-examine this traditional belief.

The low rating of school as a factor affecting decision to attend senior vocational-industrial school may indicate that little or ineffectual counseling and guidance is being provided in the junior middle schools.

Further evidence of this may be found by analyzing the source of students enrolled in the senior vocational-industrial schools.

Item II--Source of Students. Schools graduating students who selected the two senior vocational-industrial schools are the junior academic middle schools and the junior vocational schools of various kinds. A large majority (77.6%) of the students graduated from junior academic schools. Graduates of junior vocational-industrial schools constitute the next largest number (17.9%). Junior vocational-agricultural schools supplied 11.1% and vocational-commercial schools accounted for 0.3%.

One might assume that academic junior middle school graduates are planning on attending senior academic schools. By the same logic, one would expect the junior vocational-industrial schools to be preparing their graduates for senior vocational-industrial schools. In fact, this is the assumption on which these schools are based.

However, only 17.9% of the senior vocational school students were graduated from junior vocational-industrial schools, while 77.6% graduated from academic junior middle schools. This may mean that the entrance examination for the senior vocational-industrial school is oriented toward the knowledge that a student gains in an academic school rather than that of a vocational school. It also could mean that students graduating from the junior vocational-industrial schools are not applying for entrance to the senior school.

Still another interpretation of these data might indicate that graduates of the junior academic schools cannot pass the entrance examinations for the senior academic schools, and so select the vocational-industrial school as the only means of furthering their education.

In comparing the urban and rural areas, a higher percentage of senior school students were graduated from junior vocational-industrial schools in rural Hsinchu (35.1%) than in urban Taipei (8.9%). In all probability this can be accounted for on the basis of the larger number of academic schools available in Taipei.

Other sources of students, the junior vocational-agricultural

schools supplied no (0%) graduates to the Hsinchu senior vocational-industrial school, and only 1.7% of the enrollment in the Taipei school.

This could indicate that rural junior vocational-agricultural school graduates return to the farm, and do not apply for admission to a rural senior vocational-industrial school. A similar survey of senior vocational-agricultural schools might lead to such a conclusion. Another source of inquiry might be a record of applicants taking the senior vocational-industrial school entrance examination and failing to pass. Such data, however, have not been recorded.

A study of the data also reveals the interesting fact that the percentage of students graduating from junior vocational-industrial school has become less in Taipei during the years 1958 (23.5%) to 1960 (3.4%), while the percentage of graduates from academic schools has increased (72.6% in 1958 to 91.9%). This indication exists in the face of increasing government emphasis on the need for more vocational education.

Item III--Previous Examinations Taken. An assumption made earlier was that senior vocational-industrial school students do not wish to become skilled workers, but rather select senior vocational school to further their education since this is the only school to which they can obtain admission.

To test this hypothesis the students were asked to indicate, in order of choice, the number of entrance examinations they had taken prior to the one for senior vocational-industrial school.

Nearly two-thirds of the students (66.1%) took at least one other entrance examination, 16.9% took at least two, 3.1% at least three, and 0.6% at least four. All who had taken any previous examination (66.1%) named an academic senior middle school as one of their selections.

The students indicate consistent order of preference in selecting a school to attend: 43.8% selected an academic school as their first choice, 15.9% selected Taipei Institute of Technology (T.I.T.) which offers a five-year program (equivalent to two years of college), and 6.4% selected normal schools as their first choice. Thirty-three and nine-tenths per cent did not take other entrance examinations, selecting the vocational-industrial school as their first choice.

These findings give further evidence to support the assumption that there still exists a desire for academic education in China--indeed, a belief that academic education is the only worthwhile education. The vocational-industrial school is a second choice in two-thirds of the cases. A substantial 15.9% of the total sample, who apparently were technically rather than academically oriented, attempted first to enter Taipei Institute of Technology, and applied

to the vocational-industrial school only after failing to gain entrance to the Institute.

More urban students (70%) took at least one other examination than did rural students (58.9%). This may be because the Taipei area offers a larger number of schools from which to choose than does Hsinchu.

Also, a larger proportion of Taipei students (50.9%) selected an academic school as their first choice than did the Hsinchu students (30.7%). Fewer urban youngsters (30.0%) chose vocational-industrial schools as their first choice than did the rural youngsters--again, perhaps because of fewer academic schools being available.

Also, it would appear that while Taipei Institute of Technology has an equal appeal between city (16.0%) and rural (15.8%) there is a difference in choice concerning a teaching career. For, while only 3.1% of the urban students selected normal school as their first choice, 12.8% of the rural students preferred teaching elementary school to vocational-industrial school training.

The question arises, then, whether the students attending vocational-industrial school, two-thirds of whom did not select skilled worker training as first choice, soon give up their aspirations for higher education.

Item IV--Desire to Enter College. If a student desires to pursue higher education on Taiwan he must take the United College Entrance Examination. This examination is administered by the Ministry of Education, and those passing are allocated to colleges and universities depending upon their rank order, examination scores, the student's choice of college and department (he may list up to 25 departments or fields of study), and available facilities.

It seemed pertinent to attempt to determine whether students who have aspirations for college come to accept vocational education as terminal during the three years they attend vocational-industrial school.

A majority of the students (66.7%) do not plan to take the examination as they progress through their vocational-industrial school program. Thirty-one and five-tenths per cent of the Taipei and 36.0% of the Hsinchu first-year students plan to take the examination, and Taipei (26.7%) and Hsinchu (30.6%) third-year students have this same expectation.

Although 43.0% of the students first tried to enter academic middle school, it is apparent that over two-thirds (66.7%) of those attending vocational-industrial school do not plan to continue their formal educational careers beyond this point. To this extent it is

considered by the students as being terminal. It must be realized, however, that of this 66.7%, 33.9% did not take previous examinations, and presumably had no aspiration for college, or felt that they could not qualify.

To summarize, since it is popularly understood that attendance at a vocational-industrial school leads directly and only to employment as a skilled laborer, the foregoing data indicate that the majority of vocational-industrial school students surveyed did not initially desire to enter the labor force as skilled workers. Their order of preference for a senior middle school education was first, academic school; second, vocational-industrial school; third, Taipei Institute of Technology; and fourth, normal school. Over one-fourth of the students still plan to attempt college entrance after vocational-industrial school graduation, rather than entering the skilled labor forces.

Parents influenced the majority of the students' choice to continue their education at a vocational-industrial school while the junior middle school exerted only a small influence upon their choice.

Rural youngsters indicated more independence of action, were more favorably disposed toward normal schools, and showed less desire for academic school than the city students.

Vocational-Industrial School Graduates Survey. A large responsibility is given to the vocational-industrial schools to supply the needed cadres of skilled workers to achieve accelerated technological development in the Republic of China. Prior to the time that eight of the twenty-three vocational-industrial schools adopted a unit-trade curriculum, incorporating more shop practice and less theoretical subject content, it was felt by many leaders that the vocational-industrial school was not fulfilling its proper function to industry by supplying skilled workers capable and willing to take their proper place in industry. It was stated by some that factories preferred to train their own skilled workers rather than hire vocational-industrial school graduates, thus creating an unemployment problem among graduates of vocational-industrial schools.

Since incorporation of the unit-trade curriculum, leaders have said that problems have been solved, more vocational-industrial school graduates are working in industry, and that the vocational-industrial schools are now fulfilling their proper function by supplying graduates to the skilled worker force. Although various reports of the vocational schools indicate a large percentage of vocational-industrial school graduates enter industry, it is still not known whether they enter jobs related directly to their training, nor is it known why some graduates do not enter the skilled labor force.

Also unknown is the manner in which the graduates obtain employment

in industry. Related to this is the question of whether school-industry cooperation has advanced in a few years time to the point where schools effectively can channel skilled workers into industries needing them (despite prejudices against these graduates that may have been held by industry in the past).

Electricians and machinists are basic to all of the established industries on Taiwan as well as those slated for expansion under the Third Four-Year Plan. A survey of electrician and machinist unit-trade graduates of 1958, 1959, and 1960 was conducted in order to test the hypotheses underlying statements made by Chinese and American leaders involved in the hoped-for achievement of Republic of China industrial development goals.

Objectives. The objectives of the survey of vocational-industrial school graduates were: (1) to identify numbers of vocational-industrial school graduates employed in industry, (2) to identify reasons why some graduates were not working in the trades for which they were trained, and (3) to identify the various ways graduates obtained employment in industry.

Nature of the Sample. A nonprobability purposive sample of the 1958, 1959, and 1960 graduates of two vocational-industrial schools was selected based upon the following criteria: (1) the schools must have a unit-trade curriculum; (2) the schools must be located in one of the two major industrial areas of Taiwan, Taipei, and Kaohsiung since these are the largest industrial areas and offer greatest employment opportunities to graduates; and (3) the schools must have machinist and electrician unit-trade graduates for the years 1958, 1959, and 1960 since these are two of the largest labor-need areas in Taiwan.

From the two vocational schools selected, Taipei Municipal Vocational-Industrial School and Kaohsiung Provincial Vocational-Industrial School, 371 (86.1%) responses were received from the 431 graduating in classes of 1958, 1959, and 1960 in the machinist and electrician unit-trades.

Procedures. The following survey form was developed with the cooperation of the Vocational-Education Department of the Taiwan Provincial Normal University:

SURVEY FORM FOR GRADUATES OF 1958, 1959, AND 1960
MACHINIST AND ELECTRICIAN UNIT TRADES FROM
TAIPEI SENIOR VOCATIONAL-INDUSTRIAL SCHOOL AND
TAIWAN PROVINCIAL KAOHSIUNG SENIOR VOCATIONAL-INDUSTRIAL SCHOOL

1. Name _____ Age _____ Army _____
2. Home address _____
3. School _____ Year of graduation _____
4. For what trade were you trained while in school? _____
5. Present salary _____ bonus and/or welfare, if any _____
6. What trade or job are you working at now?
Address _____
Major production _____
7. Date employed _____ Starting salary _____
8. If your present job is different from the trade for which you were trained, give your reason for changing to another occupation.
(check one)
 - () Am working in same trade
 - () No job available in my trade
 - () Disliked trade for which I was trained
 - () Found better opportunity
 - () This work pays better
 - () Prefer working closer to my home and family
9. How did you secure your present job? (check one)
 - () Through friend or relative
 - () Through teacher and school
 - () Through advertisement
 - () Through public employment office
 - () Through personal efforts
 - () Other means (explain) _____

Item 7—Working in Trade. An analysis of those graduates working in

The two vocational-industrial school principals and their staffs were requested to assist the survey by supplying graduates' names and addresses. The Provincial Commissioner of Education gave official endorsement to the survey by sending a letter to the school principals granting permission for the survey to be undertaken. The survey forms and return envelopes were then delivered to the two vocational-industrial schools with envelopes addressed to the graduates. From the vocational-industrial schools the survey forms were mailed to the graduates and returned by them directly to the writer.

Two follow-up postcards were sent by the writer at two two-week intervals. The findings of the returned survey forms were translated and tabulated by the writer with the assistance of personnel from the Vocational Education Department of the Taiwan Provincial Normal University.

Data Analysis and Tabulation. Taipei and Kaohsiung vocational-industrial schools have graduated approximately the same number of machinists and electricians in 1958, 1959, and 1960. A higher return of survey forms were received from Kaohsiung (91.2%) than from Taipei (80.9%). The graduates occupation data were classified in three categories: working in industry, not working in industry, and undergoing military training.

Item I--Working Status of Graduates. Working in industry were 58.0% of the Taipei graduates and 80.3% of those graduated from Kaohsiung. Approximately the same number of graduates were in the military forces from Taipei (19.0%) and Kaohsiung (17.0%). A higher number of Taipei graduates (23.0%) than those of Kaohsiung (10.7%) were not employed in industry.

One inference that can be drawn from these data is the necessity for planners when planning skilled worker output from the vocational-industrial schools to take into account both the conscription law and those who, for one reason or another, will not enter the skilled worker force.

In both schools the number of graduates has increased but slightly during the past three years. These small increases from 1958 (134 graduates) to 1960 (152 graduates) would not appear to be a response to the demands for skilled workers implied in the Third Four-Year Plan. This slight enrollment increase is reduced further if the proportion of those actually working in industry, as found in this survey (66.6%), is projected to the entire vocational-industrial school electrician and machinist output.

Item II--Working in Trade. An analysis of those graduates working in

industry indicates that a majority (61.5%) are working at the trade for which they were trained while the remainder (38.5%) held jobs different from their unit-trade training.

Differences are also observed between the two schools as well as within the schools and by unit-trade. For instance, more machinists from Kaohsiung (75%) have jobs as machinists than those from Taipei (56.9%). However, slightly more electricians from Taipei (58%) have jobs as electricians than do those from Kaohsiung (54.9%). Additionally, more machinists from both schools have jobs as machinists (67%) than do electricians who hold jobs as electricians (56.1%).

One action which these data might suggest is that a study be made of the kinds of industry in each of the two industrial areas in order to estimate more adequately unit-trade class size for the respective schools, and to bring output of the schools more accurately in line with local industrial needs.

This suggestion is promoted further by the fact that in each succeeding year fewer electrician graduates have gone into the electrician's trade. Also, a majority (55.2%) of those working in industry consistently indicated the reason for their not pursuing their unit-trade as being "unable to find a job." A higher percentage of Taipei machinists (86.4%) and electricians (61.9%) than Kaohsiung machinists (25%) and electricians (45.9%) not working in their unit-trade indicated this factor.

Graduates working in industry but not having jobs for which their unit-trade prepared them list four causal factors: (1) unable to find a job (56.1%), (2) a better future in their present position (23.0%), (3) they do not like their unit-trade (18.4%), and (4) better pay in present position (2.5%).

Those not working in industry indicated a different rank order of these same four factors: (1) a better future in present position (44.3%), (2) do not like their unit-trade (13.1%), (3) better pay in present position (9.8%), and (4) unable to find a job (3.3%). Not responding to this question were 29%.

Several questions can be raised from these data. If a graduate is unable to find a job, is it because there is no need for his skill? Is it because there is need for better placement facilities? Or, is it because industry is prejudiced against these graduates?

Another conflicting factor is that while there is a slight decrease in Taipei machinist graduates obtaining jobs in their unit-trade (1958, 50.0%; 1959, 47.4%; 1960, 33.3%), the training facilities of the Taipei vocational-industrial school are not reflecting this decrease, and in fact, are showing a slight increase in machinist graduates each year (1958, 32; 1959, 36; 1960, 37).

Therefore, it would appear that the Taipei vocational-industrial school is increasing its machinist output slightly (consistent with national needs as stated but undefined in the Four-Year Plans) while many graduates are not entering the field for which they prepared.

Item III--How Jobs Obtained in Industry. The five ways graduates obtained their jobs in industry, in order of occurrence, are: (1) through the school (teacher) (49.0%), (2) through friends and relatives (21.9%), (3) by taking an examination (17.4%), (4) by himself (7.3%), and (5) through an employment agency (1.2%).

A majority (66.6%), then, of the unit-trade graduates responding to the questionnaire are working in industry and of these two-thirds are employed at the unit-trade for which they were trained. Stated another way, for every 100 machinists and electricians graduated, only 43 are working in industry at their particular trade. Of those not working in industry, approximately one-half are fulfilling their obligation in the military (and may enter or return to skilled worker jobs) and one-half are not working in industry. Of those not working in industry, only a small number (3.3%) indicated it was because they were unable to find a job. The majority (49.3%) seemed to feel there was a better future in their present position.

These findings reveal more clearly than any other, perhaps, the dislocation between output of the vocational schools and use of this output by industry. In the important areas of electricians and machinists, there are indications of a decrease in the number of graduates of these trades who are going into the trades. The response of nearly half of those not working in industry, "better future in present position" is germane. This inclination of the people to seek employment with a "better future" while the government stresses the need for vocational skills is perhaps parallel to the inclination of the people to seek academic education while the government urges vocational education upon them.

The school is helping graduates secure employment in industry (49%) as are friends and relatives (21.9%). Fewer graduates are securing jobs through their own efforts (5.2%) or by taking a company examination (15.4%). The difference between the school's efforts and company efforts (as reflected by a small number of jobs obtained by examination) is perhaps indicative of the earlier mentioned hypothesis that the companies are slightly suspicious of vocational school graduates, and while they accept them, they do not seek them.

It is unknown from this survey whether those who enter military training return to civilian status and enter the work force at jobs related to their training. One area to be explored from these data might be to attempt to ascertain if those skilled workers enter the skilled labor forces after military service and how their job

efficiency was affected by their term with the military.

Industry Skilled Worker Survey. The Industry Skilled Worker Survey included all the nonagricultural sectors of the Chinese economy, based upon the comprehensive 1959 Industrial Occupational Survey conducted by the Taiwan Provincial Normal University Vocational Education Department.¹

After categorization we find that Sector I, Manufacturing, comprises over 75% of the labor force with over 78% of those workers defined as skilled and semi-skilled. In the subsectoral analysis, I, (Transportation Equipment, Manufacture, and Repair) has the highest ratio (65.7%) of skilled workers to the total number of employees in the subsector.

The distribution of the remainder of the labor force, in order, is V, Mining (10.6%); III, Construction (5.5%); and playing a small part in the total employment makeup is IV, Trade and Commerce (0.8%) and Services (0.2%).

The question facing leaders in China when planning their national goals is the value of the role education is to take for contributing to the economic reconstruction on Taiwan. Specifically, what place should be accorded to vocational education in order to accelerate economic development?

Thus far it would seem a reasonable hypothesis that vocational education and industry have been developing independently of one another. The plan forwarded by the Ministry of Education² proposes money be allocated to education from the Four-Year Plan for educators to use to train youth in specific skills. But what skills does industry need? From the sample of vocational school students we would assume there is almost equal need in the economy for printers (15.7%) as for electricians (13.1%). However, the Industrial sector shows that subsector E, Printing and Bookbinding employ 2.4% of the work force while K, Electrical Equipment and Manufacturing, and Section II, subsection A, Electricity, Gas and Water Supply, employ over twice (5.2%) that amount in the total work force.

If planning between industry and vocational education is to be meaningful, it would appear, therefore, that industry must be surveyed to ascertain the service role the vocational-industrial school is to play in rapid economic development. It would appear essential that this step be taken prior to requests for scarce funds from the Four-Year budgets.

1. Comprehensive Report, 1959 Industrial Occupational Survey, Engineering and Technical Operations (in five parts), December 1959 (in English and Chinese).
2. Chiao Yu Pu. "Ti San Chi Szu Nien . . ." ("A National Plan of Conservation of Human Resources," Ministry of Education, 1961).

Objectives. The Industry Skilled Worker Survey was conducted with the following objectives: (1) to identify the number of newly trained skilled workers needed in the next 12 months (from March, 1961) by the selected factories, (2) to identify the number of skilled workers needed in the several categories in the next 12 months, (3) to gather information concerning the age and educational background of the skilled workers presently employed in industry, (4) to gather factory managers' recommendations for vocational-industrial schools, and (5) to gain additional information helpful to planners.

Nature of the Sample. A nonprobability purposive sample of the non-agricultural economic sectors of the Chinese economy was selected by personnel from the Vocational Education Department of the Taiwan Provincial Normal University. Consent for the survey was obtained from the Department of Industry of the Ministry of Economic Affairs. The criteria for selection were: (1) that the sample be representative of the nonagricultural sectors of the economy, (2) that the sample include both public and private factories to provide balanced representation, and (3) that the factories may be located in any part of Taiwan.

A comparison of the percentage of employees in the nonagricultural sector of the economy with the percentage of employees in various sectors of the sample are shown in Table 9.

The ratio of skilled workers to total number of employees in Sector I, Manufacturing, is very close to that of the economy (43.9%) and the sample (43.0%) (see Table 10) and very different in Sector V, Mining, where the ratio is 36.2% for the economy and 75% in the sample. This differential was taken into consideration in analyzing the data.

Procedures. A questionnaire was developed in cooperation with the Vocational Education Department of the Taiwan Provincial Normal University and the Department of Industry of the Ministry of Economic Affairs. The questionnaire is reproduced on the following page.

Permission was obtained from the Department of Industry of the Ministry of Economic Affairs to conduct the survey. The questionnaire forms were mailed by the writer to the selected factories and two follow-up postcards were sent at two two-week intervals. Thirty-seven (74%) of the 50 factories contacted responded.

Data Analysis and Tabulation. The findings were translated and tabulated by the writer with the assistance of personnel from the Vocational Education Department of the Taiwan Provincial Normal University.

SURVEY FORM FOR FACTORY SKILLED WORKER

1. Future numbers and types of skilled workers needed.

JOB TITLE	SKILLS NEEDED TO PERFORM	RELATED INFORMATION NECESSARY TO JOB PERFORMANCE	NUMBER NEEDED	METHOD OF HIRING
<u>EXAMPLE</u>				
Machinist	Lathe, drill press milling mach. oper.	Blueprint reading, heat treatment of metals	20	Company Examination of Applicants

2. Skilled worker age

- a. -20 _____
 b. 21-30 _____
 c. 31-40 _____
 d. 41-50 _____
 e. 51+ _____

3. Higher level of education by skilled workers

- a. Elementary _____
 b. Middle _____
 c. Voc.-Ind. _____
 d. Apprentice _____
 e. Other _____

4. Skilled worker

a. Salary scale

Low _____
 High _____
 Average wage of
 skilled worker _____

5. Number of employees

Staff _____
 Skilled workers _____
 Unskilled workers _____

b. Welfare benefits for employees in addition to wages

6. Suggestions for improvement of vocational-industrial school courses _____

7. Factory training center

Hours per week _____
 Subjects taught _____

8. Skilled worker hiring procedure:

- a. General standards _____
 b. Method of testing and/or interviewing _____
 c. Reasons why applicants are not hired _____
 d. Approximate percent of job applicants hired _____

TABLE 9

COMPARISON OF PERCENTAGE COMPOSITION OF SECTOR EMPLOYMENT
BETWEEN THE ECONOMY AND THE SURVEY SAMPLE

Sector	Percentage of Employees in Nonagricultural Sectors of the Economy		Percentage of Employees in Nonagricultural Sectors of Survey Sample	
	No. of Employees	Per Cent	No. of Employees	Per Cent
I. Manufacturing	192,769	75.7	26,027	83.1
II. Transportation & Communication	16,173	6.4	1,290	4.1
III. Construction	14,035	5.5	--	--
IV. Trade & Commerce	2,134	.8	--	--
V. Mining	26,968	10.6	3,993	12.8
VI. Services	478	.2	--	-
V. Other	1,977	.8	--	--
Total	254,534	100.0	31,310	100.0

TABLE 10

RATIO OF SKILLED WORKERS TO TOTAL
EMPLOYEES IN SURVEY SAMPLE

	Number of Factories	Employees				Ratio: Skilled Workers/ Total Employees
		Total		Skilled		
		Number	Per Cent	Number	Per Cent	
I. Manufacturing						
A. Food, beverage, and tobacco		6,983	22.3	1,411	9.5	20.2
B. Textile		2,085	6.7	232	1.6	11.1
C. Lumbering and furniture		458	1.5	74	.5	16.2
D. Paper and paper products		253	.8	31	.2	12.2
E. Printing and bookbinding		451	1.4	345	2.3	76.5
F. Leather and rubber goods		390	1.2	350	2.3	89.7
G. Chemical products		3,193	10.2	1,182	7.9	37.0
H. Metal products		7,593	24.3	4,122	27.6	54.3
I. Electrical equipment		165	.6	110	.7	66.6
J. Transportation equipment		4,456	14.2	3,339	22.4	74.9
Total manufacturing		26,027	83.2	11,196	75.0	43.0
II. Transportation and communication						
A. Electricity, gas, and water		1,290	4.1	780	5.2	60.5
Total transportation and communication		1,290	4.1	780	5.2	60.5
V. Mining						
A. Coal		2,299	7.3	1,335	8.9	58.1
B. Metal		1,694	5.4	1,621	10.9	95.7
Total mining		3,993	12.7	2,956	19.8	74.0
Total	37	31,310	100.0	14,932	100.0	47.7

Item I--Age and Education of Labor Force. In the economy we find 42.1% of the labor force defined as either skilled or semi-skilled. This means that this number of employees (107,176) received training at some time and some place. This is similar to the 47% of the employees in the sample which were classified as skilled (14,932).

Industry reported that of these, 8.9% had graduated from vocational-industrial school. The majority (68.8%) had joined the labor force after elementary school graduation. This number combined with those having dropped out of elementary school prior to graduation shows that 81.1% of the skilled labor force had formal education consisting of six or less years.

While attaining skilled worker status through apprenticeship programs is negligible (2.9%), twenty-two factories either have training programs of their own or send employees to training centers. Eight factories have no training or skill upgrading facility.

From these data it would appear that factories do not rely upon the vocational schools as the supplier of their needs for skilled workers, and that a youth with an elementary school education obtains employment and attains a job defined as skilled through training programs within industry.

One would expect, then, to find a considerable number of skilled workers in industry to be under the age of 20, assuming that they started employment after dropping out or graduating from elementary school at age 13 or 14. However, we find that only 4.1% of the skilled worker force is under 20 years of age. In contrast, 72.5% of the skilled worker force is between the ages of 21 to 40.

Several inferences can be made from these data: (1) youth are not finding employment; (2) youth are finding employment but their internship as unskilled laborers lasts until they are over 20 years of age; (3) their joining the skilled labor force from apprenticeship or training programs is delayed or interrupted by military service; or (4) unskilled workers are receiving skilled training during their military service which is applicable to the needs of industry.

It would appear desirable that further research be carried out to deal with these inferences because they could affect the role to be played by the formal educational agencies in supplying skilled workers for industry. By the same token, if large numbers of youth who do not continue education beyond elementary school (approximately 50%) are not finding employment, a social problem could be the result, as well as a loss to the industrial sector of potential human resource capital. Additionally, the work force appears to be relatively young in that only a small percentage (5.9%) of the skilled worker force is composed of men over 50 years of age.

Item II--Labor Needs by Categories. The qualitative definitions of future (next 12 months) skilled worker needs received from industry are in three categories: (1) no response (eight factories, 22.2%), (2) categories of skilled workers needed but omitting the numbers needed (12 factories, 33.3%), and (3) categories of skilled workers and numbers required (12 factories, 44.4%).

Factories in the Manufacturing Sector, I, identified almost 95% of the skills needed by category. Of the twenty-one skill categories identified, machinists (17.5%) and electricians (15.8%) hold the dominant position, as they do also in the enrollment figures of the vocational-industrial schools surveyed.

However, of the identified skill categories, several are not taught as a unit-trade in the vocational-industrial schools. These include Textile Workers (1.8%), Hoist and Crane Operation and Repairs (5.3%), Refrigerator Systems Repairmen (17.5%), and Painters (1.8%). Three of the skills identified, that of Underwater Machinists (1.8%), Chemical Analysis Inspectors (5.3%), and Ship Framers (1.8%) would probably be filled by candidates from both the three-year Maritime College and the Taipei Institute of Technology (T.I.T.).

All other identified skill categories are included in the vocational-industrial school curriculum. Of these, foundrymen, plumbers, and wood patternmakers are new additions to most vocational-industrial school course offerings since 1959.

Item III--Future Labor Needs. The twelve factories quantifying their future skilled-worker needs identified twenty-four skilled worker categories. Manufacturing identified the largest number (49.7%) consistent with the dominant position manufacturing holds in the nonagricultural sectors of the Chinese economy. Machinists (22.7%) and electricians (31.3%) account for over half the workers needed, again indicating the integral nature of these two skilled worker categories for Chinese industry. One category to which a vocational-industrial school graduate might qualify in the future is also relative to these two trades, Machine and Electrical Apparatus Inspector (2.9%).

Another skill category more theoretical in nature than the vocational-industrial school curriculum is that of Chemical Analysis Inspector (2.9%).

Four skills identified would not be included in a vocational-industrial school curriculum: Sugar Cane Machine Unloader (.96%), Automatic Packing Machine Operator (1%), Limestone Machine Tender (.6%), and Smelter (3.2%). These, in all probability, rank within a low semi-skilled category that can best be supplied with short-term in-service training. This may also be the case with the categories Boiler Tender (1.3%) and Chemical Worker, Fermentation Machine (4.8%).

Admittedly it would be tenuous to project concrete quantitative manpower categories from these data. Two inferences of import, however, can be made. One, in view of the varied nature of skill categories needed (24), should not educational leaders evaluate their views regarding the change of the remaining 15 of the 23 vocational-industrial schools into unit-trade curricula? Secondly, if all vocational-industrial schools adopt the unit-trade curriculum, it would appear necessary to launch more industry cooperation for the special requirement of machinery and operations required by the manufacturing and mining sectors of industry. The 15 vocational-industrial schools not employing the unit-trade curriculum report no existing programs for their vocational-industrial students in factories. All the programs noted were by vocational-industrial schools with an established unit-trade curriculum.

Perhaps the most significant finding of this survey is that the firms surveyed identified only 313 future skilled workers needed in the next 12 months to add to their total skilled worker force of 14,932. This figure (2%) leads to several inferences: (1) that turnover is slight because the skilled worker force is young, (2) that the 7% turnover rate vocational-industrial school educators use for planning is erroneous, or (3) that the industries do not know accurately their future needs. Whether these or other factors influenced the low number of skilled workers needed should be subjected to further research in an attempt to identify more clearly the ratio between supply and demand.

Another variance between vocational-industrial educators and factory managers is indicated by the fact that only eight of the thirty-four factories surveyed took advantage of the opportunity to offer suggestions for the vocational-industrial school programs. Of the remaining firms (26), one thought he had to pay the school in order to obtain vocational-industrial school graduates; one, with a large Industry-School Cooperation Plan in operation in Southern Taiwan, doubted that schools could teach students to run the machines; and, one stated that vocational-industrial schools were not needed.

Item IV--Managers' Suggestions. The positive suggestions made by the eight factories responding are compiled below: (1) schools should increase shop practice (4 firms); (2) students should know more theory and principles about machines (2 firms); (3) vocational-industrial schools should train miners (1 firm); (4) foreign textbooks should be used to teach students about the United States, Japanese, and German machines used in industry (1 firm); (5) students must have more of the "service" spirit (1 firm); and (6) strengthen the machine drawing course (1 firm).

It appears that thus far the factories have had little difficulty finding workers to hire. The 16 firms responding to the question "What percent of job applicants are hired?" indicated the following:

one (textile) indicated 90% are hired,³ one (mining) indicated 80% hired,⁴ and two (manufacturing: sugar and beverage) 70% hired "when hiring." The remaining 33 firms responding indicated an average of 19% hired (range, 50% - 2%; md. 20%).

Reasons given for not hiring applicants are summarized in the following categories: (1) a lack of skill and knowledge (19 firms); (2) poor health (11 firms); (3) age, too young or too old (8 firms); (4) limited jobs available (5 firms); and (5) bad personality (2 firms). Ten firms give employment examinations, which, for the most part, consist of a skill test, a written general knowledge test, and a health examination.

An inference from these data, considering the small percentage of applicants hired and the most frequent reason given as lack of skill, is that the vocational-industrial school has a role beyond that which it is playing now--to provide skilled workers to industry. The extent to which these workers are acceptable to industry and the correlation of their skills to the needs of industry must be subjected to further research.

To summarize, the majority (68.8%) of skilled workers have attained only an elementary school education. Relatively few (8.9%) of the skilled workers have come to industry from the vocational schools (Japanese or Chinese).

The skilled worker force is young, 80.8% being between the ages of 20 and 40 years. A very few (4.0%) skilled workers are under 20 years of age.

A main reason for not hiring job applicants is "lack of skill," yet industries apparently fill their vacancies from a large number of applicants.

There appears to be a sharp discrepancy between the number of skilled workers called for in the Third Four-Year Plan and the number which industry indicates it requires. The Plan, which specifies 374,000 additional workers by 1964, calls for 175,000 workers defined as skilled, or 43,545 skilled workers per year. The sample used in this survey, consisting of 14% of the total skilled worker force, indicates a need for 313 skilled workers in the next 12 months. Projecting this figure to the entire nonagricultural economy, we find a need for approximately 2,200 additional skilled workers in 1961, the first year of the Third Four-Year Plan, or 8,800, by 1964.

While the government is calling for this great increase, industrial

3. This firm hires female workers as machine tenders and classifies them as skilled.
4. This firm includes diggers as skilled workers.

management does not foresee any such need. Perhaps this discrepancy lies in the difference between an idealistic, optimistic government goal and a conservative, practical industrial viewpoint.

Whatever the cause, this discrepancy, characteristic of other maladjustments between government, industry, and education seen in this paper, will need to be resolved before the problem of skilled labor on Taiwan can be solved.

The turnover in the skilled worker force indicated by the survey is less than that estimated by vocational school educators. However, if the needs set forth by the Plan materialize, the entire enrollment of the vocational-industrial schools would provide only one-fourth of the needed skilled workers.

If managements' figures are correct, the vocational-industrial schools are overproducing slightly; if the government estimates are correct the schools are underproducing woefully.

CONCLUSIONS AND RECOMMENDATIONS

The Republic of China, now confined to Taiwan, poses interesting problems for those concerned with economic development and the manner in which educational planners can contribute to economic goals.

The Province of Taiwan presents, in microcosm, the problems faced by many nations in the world as they attempt to accelerate technological development to better the lives of their citizenry. In addition to the necessity for a large military establishment, these problems include population pressure occasioned by improved nutrition, early advances in disease control, a comparatively low standard of living, much expenditure for social consumption (religious festivals, funerals, etc.), rising expectations, change in traditional cultural patterns (including the place of home and family), and increased urbanization as emphasis is given nonagricultural sectors of the economy.

Since 1950 the Republic of China has endeavored to bring into actuality on Taiwan a society based upon principles set forth by Sun Yat-sen. These efforts, which include advance toward industrialization, more educational opportunity, and wider participation in government, have been successful in varying degrees.

The primary retarding factor has been the spectre of the Communist regime on the Mainland, which necessitates a large expenditure of material and human resources for the armed forces. Without this defense necessity a larger share of these resources could otherwise have been allocated for reconstruction. The Government has attempted to offset the consumption of the armed forces by employing military equipment and personnel on conservation projects, primarily for roads, bridges, and flood control.

The funds remaining in the national budget after the defense allocation have been used generally for reconstruction. At the provincial and local levels a great deal of the available funds have been spent for education. This expenditure reflects the concern of the Chinese for education.

In view of this dual concern for achievement of current national goals and for education as an important factor in national life, has education been used effectively as an instrument of national policy for the achievement of economic goals?

This question--the central concern of this paper--can be answered in terms of the conclusions drawn from the background material and research reported earlier in this study.

CONCLUSIONS. The major conclusion of this study is that education in the Republic of China is not being utilized, deliberately or effectively, as a primary instrument for the achievement of national economic goals.

While it is true that much effort and expenditure of funds is allocated for education, it is also true that educational programs have developed independently of the national economic goal planners.

It is also persuasive that education is contributing to the general national purpose by providing the citizenry with attitudes and skills necessary to advancement.

However, by not assigning specific priorities to programs coupled with manpower requirements, by not having facilities to test and guide youth into various curriculums necessary to the accelerated economic growth targets, and by not measuring the effectiveness of the various educational outputs, the government is failing to use education in a primary role for economic development.

This is not to say that no advances have been made, for this study presents evidence that the Republic of China has made progress toward realization of educational goals as well as economic goals. But it can be seen that these advances have been made, in the main, independently of one another. Aside from a limited amount of vocational-industrial school cooperation with industry in specific skilled worker training programs, educational institutions have had little direct participation in the formulation of economic growth goals or in their implementation.

Reasons for this conclusion (based on the research findings given in this paper) are listed below.

Lack of Coordination between Government, Schools and Industry. Despite the fact that the Republic of China is fairly well unified under its present government, and generally there is agreement as to goals and their importance, there seem to be some serious disjunctures in the economic-educational planning to achieve national goals. There is a need for greater articulation between the three concerned institutions--government, industries, and schools.

Government-Industry Coordination. While the government, in its Third Four-Year Plan, is stating a need for 175,000 skilled workers in the next four years, industry estimates are that it will need only 8,800. Obviously there is a discrepancy here which is the result either of divergent goals or lack of communication between government and industry.

This discrepancy may also be due to insufficient information on the part of both groups. Although industries were able to identify for

this study certain categories of skilled worker needs, they were unable to denote numbers of needed workers consistent with Four-Year Plan estimates.

The conclusions lead to an identification of the critical need for further research in these areas--research which has been neglected in the past partly because of economic limitations.

Even before solving the economic problems necessary to achievement of better coordination between government and industry, a new mental attitude and awareness could improve the situation greatly. As was noted earlier, neither the Minister of Economic Affairs nor any of his staff have participated in education meetings designed to deal with problems of the vocational-industrial schools. It would seem imperative for the government to bring about such school-industry coordination and communication at the national level, where it could most easily do so.

Government-School Coordination. In an effort to improve effectiveness of the schools, the government has brought about many major and minor structural changes in education during recent years. Many of these changes were the result of new needs as seen by leaders; many were based on adopting foreign models to the Chinese situation.

It seems likely that organizational structures, adopted from abroad and incorporated by the Chinese government, may have lacked support from the subordinate levels of government and education. This lack of support (and hence, lack of effectiveness) might stem from the frequency of changes and from lack of knowledge at lower levels of the government for the reasons these changes were made.

This assumption is based upon research done for this paper and upon the observation that structures have been set up as models-to-be-achieved, and hence established before funds and personnel were available, or provisions for implementation were legislated.

The many changes in approach and emphasis as well as structure have made their impact on the vocational-industrial schools, which have been assigned the major role in the task of providing skilled workers to speed industrialization.

Vocational-industrial school enrollment has not increased proportionately as much as academic school enrollments, and manpower requirements and industrial sectors for emphasis in the Four-Year Plans are not reflected in the enrollment in the vocational schools. These two facts again indicate that there is a lack of government-school coordination.

Also, it is concluded from the findings in this study that when

leaders consider a role for education in economic development, they focus their attention almost exclusively upon the secondary level vocational-industrial schools. Apparently the question of whether allocation priorities of other kinds of vocational and non-vocational schools is in sufficient amounts to effect the greatest contribution toward accelerating economic development has not yet been studied.

School-Industry Coordination. As has been seen, there is evidence to support the belief that there is a certain suspicion on the part of industry toward graduates of vocational-industrial schools. Industry will accept these graduates, but makes no effort to obtain them.

Further, evidence from the vocational-industrial school graduates survey indicates that although graduates are, for the most part, working in industry, a large percentage of these trained personnel do not enter the labor force in the area of their specialization. Individual choice, military service, and lack of opportunity are factors contributing to this mismatching of human resource and national need.

It can be concluded that a better system of guidance is needed by the schools in order to direct students into the field of skilled labor in which they are most needed, will be best suited, and will be most happy. The need for such guidance, even before they enter the vocational-industrial school, is evidenced in the survey of students, who indicated that they were there largely by chance. It would appear that there are few, if any, facilities to guide and counsel youth into curricula correlating with the needs of the nation or of industry.

A higher degree of industry-school cooperation and consultation could overcome some of these problems. Such communication might also result in remedying two other weaknesses--the fact that vocational school enrollments are not proportionate to needs emphasized in the Third Four-Year Plan and the fact that many skilled worker categories cannot be supplied by the unit-trade curriculum.

Public Attitude Toward Education. Another conclusion regarding reasons for the comparative failure of the government to use education as an instrument of national economic policy can be drawn from the prevailing attitude of the Chinese people toward education.

Education always has been held in high regard by the Chinese. The particular education traditionally revered has been of the literary kind. With the advent of modernization, education has given more attention to vocational aspects, but the Chinese still tend to hold education, particularly academic education, to be valuable as consumption. In support of this, opportunities for education have now been extended to a greater proportion of the population than at any time since the birth of the Republic.

Chinese leaders emphasize the need for an educated citizenry and assign a heavy responsibility to the schools, which are charged with providing the nation with patriotic, healthy, educated citizens, capable of assuming a responsible role in the society and also able to aid in the foremost Republic of China goal--that of retaking the Mainland.

It is in the area of economic goals where the prevalent attitude toward education and the educational objectives come into conflict most sharply. Two thirds of the students in vocational-industrial schools once had college aspirations, and many sought entrance into other schools before entering the vocational school. This primary desire for academic education, and the subsequent acceptance of vocational school as the only way in which to continue education, do not augur well for the production of skilled workers through these schools.

The study of graduates who indicated preference for other work because of "better opportunity" or "higher pay" indicates one result of a national goal which runs counter to an attitude toward education.

From the findings of this study, then, it is concluded that educational goals stated from central governmental headquarters are not necessarily the educational goals of the people at large.

It is also concluded that, in some ways, the provisions in the constitution for education do not reflect consistently the educational goals specified by both Article 158 (objectives) and the apparent manpower needs of the Republic. For example, the writer believes that Article 161, "creating scholarships for those of good scholastic standing and exemplary conduct," implies societal rewards which continue to be given to those pursuing an academic education.

An additional complicating factor is the divergent experience of the Taiwanese and the Mainlander which results in a variety of attitudes and aspirations to be sought through education, thus complicating the problem.

Economic Factors. Certain social-economic factors also are having a negative effect on the effort to coordinate education with national economic goals.

The low turnover in many skilled labor positions indicates that there will be few positions for graduates of the vocational-industrial schools unless more industrial development occurs to create more jobs.

The low pay for these jobs, as indicated by graduates who are in other positions because of better pay, also militates against the achievement of manpower objectives in the skilled labor category.

Finally, it can be seen that while government income has risen

during the past decade, costs of government also have risen--and at a more rapid rate. On the basis of these data it is concluded that not only must priorities for allocation be established, but also new ways of finance must be innovated if education is to become an effective tool of national policy.

In light of the Economic Development Plans and plans of the Ministry of Education for human resource development, it is concluded that because of (1) lack of correlation in population data, (2) lack of funds to finance expanded programs, and (3) lack of definition of manpower requirements, new policies and programs are required in order to meet effectively the goals set forth in the Third Four-Year Plan.

It should be noted that this need for policies and programs does not stem from lack of awareness of the problem. Leaders such as the Minister of Economic Affairs, the Minister of Education, the Convenor of CUSA, the Taiwan Provincial Commissioner of Education, and others have elaborated upon problems facing the Republic.

The Minister of Economic Affairs has said that allocations of manpower are uncertain, while the Council for U.S. Aid Convenor (CUSA) has pointed out existing practices which are retarding development.

By the same token, the Taiwan Provincial Commissioner of Education has pointed out the need for a new concept of which education is valuable, as well as a need to do away with the older concepts of traditional Chinese and "Nipponized" education.

Additionally, the Minister of Education has stated a need for education to be more directly involved in planning for accelerated development.

Their views lead us to conclude that leaders recognize and have identified some of the specific problems facing China. It is also concluded that these leaders not only are aware of the problems and are working toward their solutions, but additionally, that they are receptive to suggested policies and programs made by others. It is in this belief that the recommendations in the next section are respectfully submitted.

RECOMMENDATIONS. The recommendations made in this section are based on the research findings and on the observations and experience of the author in the vocational schools and industries of Taiwan in 1960-1961.

Although primary consideration is given to vocational-industrial education by these recommendations, it is not intended that education as an instrument of national policy for economic development should focus only on the vocational-industrial school. The fact that Chinese leaders identify the vocational-industrial school in that role may be

detrimental to functions of education other than "skill training" where outputs are not so easily measured.

Recommendation No. 1. It is the author's considered opinion that the many questions for further research raised by the major conclusion of this study can best be answered by the formation of a national organization charged with conducting research.

It is therefore recommended that a National Joint Commission for Human Resource Development be organized, more aptly named the Joint Commission for Industrial Development (JCID), specifically aimed at programs for the nonagricultural sectors of the economy. A successful prototype in the agricultural sectors of the economy already exists in China in the Joint Commission for Rural Reconstruction (JCRR).

The functions of the commission would center about research, planning, advising, coordinating, evaluating, and providing legal provisions for implementing the Four-Year Development Plans.

The need for emphasizing a research capability within this recommendation is to contribute toward eliminating not only the dearth of existing research (concluded from the initial stages of this study) but also to help apply existing research findings to existing problems. Therefore, the research function of the commission would be not only to initiate needed research but also to make available research findings already completed for application to new programs.

By utilizing the micro-film equipment at the Academia Sinica and/or the purchase of other type of copy equipment, the center could soon collect a library of pertinent research from National Taiwan University and other sources.

A coordination function of the research capability could give impetus to the training of research personnel by cooperating with existing institutions and agencies where research is carried on. This coordination might include subsidies and could make facilities available to carry on research.

The research to be initiated can be categorized at three levels:

1. National Policy Level. At this level research would be focused upon income and investment allocation questions as posed in this section. Also included would be research studies relating to school finance and subject matter for training and retraining skilled and highly skilled workers.

2. Provincial Level. The implementation responsibility at the provincial level would dictate that research should focus upon the efficiency of various methods of carrying out programs. These might

include studies of short-term skill training programs, experimentation in motivation, and construction of skill aptitude and interest tests.

3. Local Level. Research focused upon the local level could start with what CUSA Convenor Li refers to as "backward practices"--lack of enterprising spirit, lack of cooperative spirit, unfamiliarity with modern commercial practice, and consumption for social prestige.

It is assumed that those responsible for curricula at the various school levels and training within industry programs would work closely with the researchers in order to develop curricula based upon the concepts and generalizations identified in the above-named studies.

The first year (1962) would be for organization and research. It would be necessary for the Ministry of Education to add a Department of Vocational Education to the Ministry. Additionally, the commission members would have to reassign areas of responsibilities among existing organizations and ministries so as to decrease redundancy of effort.

Membership on the commission would include one representative each from the Ministry of Economic Affairs, Ministry of National Defense, National Taiwan University's College of Economics and its College of Psychology, National Chengchi University (Graduate School of Education), selected public and private industries (1 small industry and 1 large), and the AID Chief of Mission--10 members in all. Possible organization of such a commission is shown in Figure 7.

To implement the work of this commission, the following action steps are suggested by level and by year:

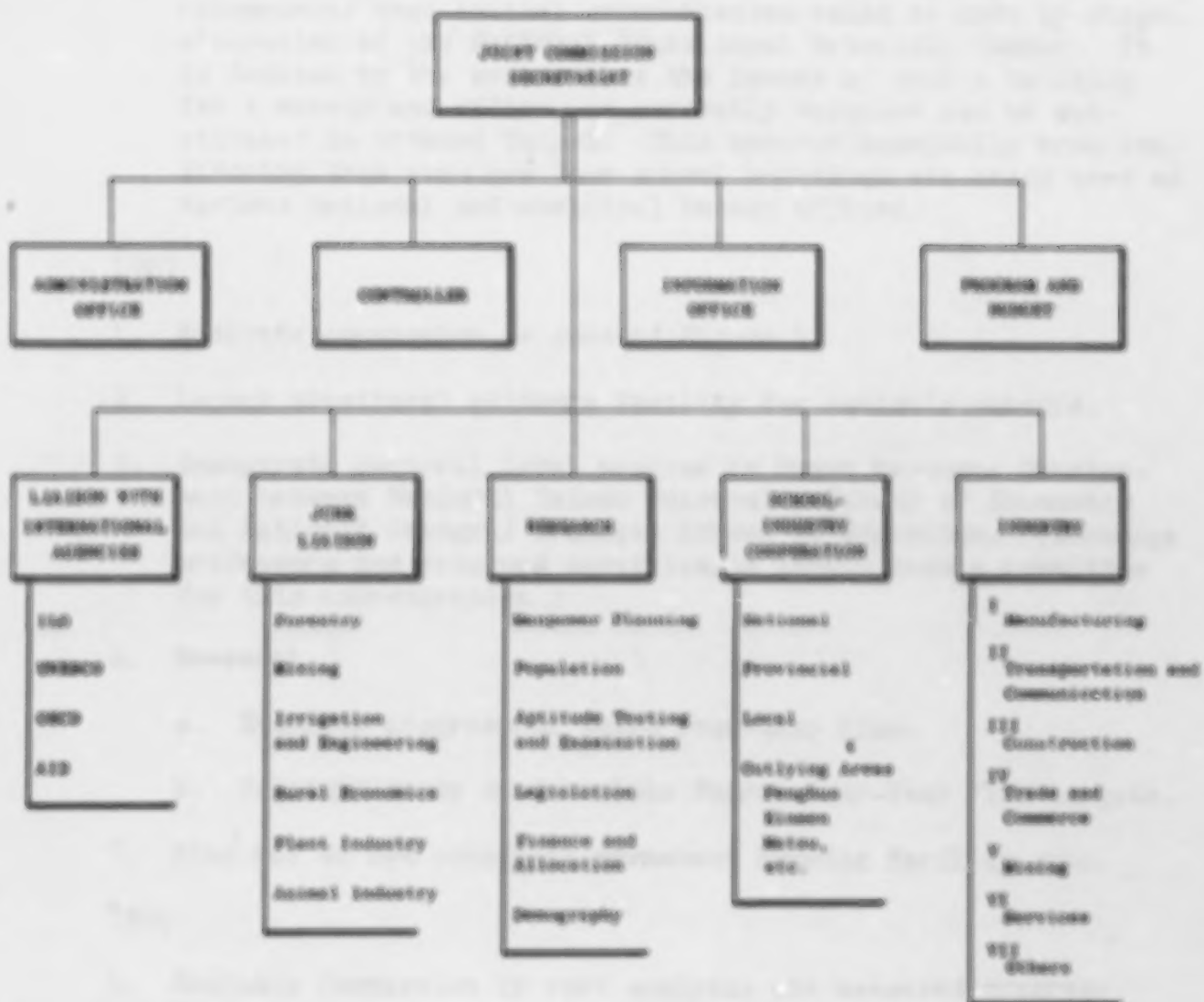
National Level.

1962

1. Members of central commission and the convenor named by the Executive Yuan.
2. Commission formulates areas of responsibility to decrease redundancy of effort among existing organizations and committees.
3. Necessary temporary legislation recommended to Legislative Yuan for the convening of the commission.
4. Two participants named.
 - a. One to a program of study similar to that existing at Stanford University in cooperation with Stanford Research Institute.

FIGURE 7

SUGGESTED ORGANIZATION FOR A JOINT COMMISSION OF INDUSTRIAL DEVELOPMENT



- b. A fellow to O.E.C.D. program for Resource Development of Mediterranean Area Nations.
- 5. Research grants made to appropriate institutions (Chinese or foreign):
 - a. Manpower study
 - (1) Sectoral analysis
 - (2) Four-Year Plan requirements
 - b. Areas for school-industry cooperation
- 6. Plan housing requirements for the developing agency. It is recommended that initial accommodation could be made by slight alteration of the National Educational Materials Center. It is doubtful by the writer that the luxury of such a building for a museum and offices as presently occupied can be substituted in crowded Taipei. This appears especially true considering that even now four school buildings are being used as various national and municipal bureau offices.

1963

- 1. Activate commission as seen in Figure 7.
- 2. Launch vocational guidance facility for nation's schools.
- 3. Inaugurate doctoral level program in Human Resource Development between National Taiwan University School of Economics and National Chengchi Graduate School of Education. (Exchange professors and returned participants should head a committee for this concentration.)
- 4. Research
 - a. Evaluate progress of Third Four-Year Plan.
 - b. Initiate study to formulate Fourth Four-Year Plan targets.
- 5. Plan but do not construct permanent housing facility.

1964

- 1. Evaluate Commission by cost analysis and measured progress. If favorable, forward proposed legislation to Legislative Yuan for permanency. If this evaluation proved favorable,
- 2. Construct permanent housing.

3. Finalize targets for Fourth Four-Year Plan.
4. Publish Chronicle of Commission for other nations accelerating economic development to evaluate and adapt.

Provincial Level.

1962

1. Provincial Coordinating Committee formed to implement policy of National Commission. Suggested representation:
 - a. Provincial Department of Education
 - b. Department of Reconstruction
 - c. Department of Communication and Transportation
 - d. Department of Agriculture and Forestry
 - e. Bureau of Water Resource
 - f. Private Industries (large and small)
 - g. Public Industry (management and guilds)
 - h. T.P.N.U. (Department of Vocational-Industrial Education)
 - i. Cheng Kung University
 - j. National Maritime College
 - k. Taipei Institute of Technology
2. Develop vocational information programs implemented from Ministry of Education and Provincial Department of Education in Cooperation with industry.
3. Plan training center for short-term skill training of school drop-outs.
4. Evaluate Provincial Placement Service for possible extension to other locations.
5. Develop training facility for school-industry extension workers (who will work with Hsien Associations outlined later in this chapter).
6. Provincial Department of Education assign Third Section to head study group of vocational education to examine Four-Year Development Plans (specifically harbor development, and other areas of manpower requirements).
7. Devise experimental groups to develop skill aptitude tests, administer, and standardize.

1963 and 1964

Implement and execute policy as developed by National Commission.

Local Level.

1962

1. Form County and Municipal Committee for Human Resource Development to participate at local level in information and involvement of local family and other organizations, industry guilds, and schools in program implementation. Suggested membership:
 - a. School principals
 - b. Mayors and other legislators
 - c. Guild representatives
 - d. Industry representatives
2. Develop information programs concerning Four-Year Development Plans and prospective rewards and responsibilities of the citizens.
3. Hold regional skill contests modeled after the present annual ones held by vocational-industrial schools. Extend participation to non-school people and rank contestants by age and years of experience in their trade.

1963 and 1964

Continuous activities as before and as suggested by extension workers.

Finance. It is suggested that the commission members plan arrangements to finance the Joint Commission on Industrial Development from existing budgets for the first year. It is further recommended that the appropriate ministries coordinate activities so as to eliminate line budget items which duplicate functions of the new commission. For instance, the Ministry of Education might allocate partial funds and functions to the Joint Commission on Industrial Development from the following existing committees and departments: Department of Higher Education, the Education Research Council, Committee for Promoting Cooperation between Education and Industry, China Scholarship Foundation, Committee for Reorientation of Displaced Youth, National Educational Materials Center, Department of Social Education, and National Academic Council.

By the same token it might also be possible for the Taiwan Provincial Department of Education to coordinate some budget and functions with the Joint Commission on Industrial Development from the following committees and sections: Educational Research Committee, Educational Forest Supervision Committee, Third Section (Vocational Education), Fourth Section (Elementary Education), Teacher Education, Local Educational Administration, and First Section (Higher Education).

It is suggested that funds received from foreign aid be so applied to priorities as listed herein. Future finance proposals should include savings effected through agency cutting of duplication of effort and a study of GNP percentage for budget allocation.

Recommendation No. 2. It is recommended that a Department of Vocational Education be incorporated within the Ministry of Education. The function of this Department would be to study the following suggestions (based on findings of this study):

1. Relate certain present subject courses (i.e. Mathematics and Science) of Vocational Schools to the vocational-trade courses. This would require new textbooks and teachers who are familiar with industry, rather than the present academic school teachers.

2. Make foreign language requirement for vocational-industrial schools different from that of academic middle schools. This proposal, based on suggestions implied in the graduates and industry surveys, would necessitate two major changes. One, revise English (presently required) and aim it specifically at industrial vocabulary building. Two, delete two years of the English requirement and add one year of industrial German vocabulary and one year of industrial Japanese vocabulary. This is important for skilled workers who may be expected to operate and maintain machines presently imported from the United States, West Germany, and Japan.

3. Develop a course of study for general shop in addition to the unit trades so as to serve small industries. These small industries, large in number on Taiwan, have manpower requirements for workers skilled in general shop, including machine work, electrical apparatus, foundry, metal, and woodwork.

4. Insure that the vocational-industrial schools enforce the 15 hours shop of weekly practice, which was established with the inauguration of the unit-trade curriculum. It was observed by the writer that this time was not kept by all vocational-industrial schools.

5. Develop a program for local industry to coordinate shop practice and skill upgrading with the schools. Many schools could better serve the industries by taking over the social studies or "attitude" study lecture, conducted in many factories. By the same token, many factories could make special machines available to school students for practice.

6. The programs available for advanced study should be increased in order for master teachers and industry leaders to work toward degrees--using case study problems for theses.

7. Coordinate programs for experienced journeymen to come in to

the schools as part-time instructors. (School and individual share expense for release time.)

8. Applied psychology and management and leadership courses should be included in teacher-training programs.

The following suggestions (based on observation and conversations of the author in Taiwan) might also be considered by a Department of Vocational Education.

1. The evaluation of the students now at internship work in a few factories should be made jointly with factory journeymen rather than just by school personnel as at present.

2. Present special courses sponsored by Telecommunications and Taipower should be a night or vacation program rather than a regular curricular offering. Students observed by the writer appeared more as subsidized bonded workers rather than matriculating potential skilled workers.

3. Vocational-industrial students should be included in a bi-weekly seminar with journeymen representatives from industry in order to enhance the status of presently employed skilled workers and to bring first-hand vocational information to the students.

4. Students in internship programs should switch factories each semester rather than staying in one factory (and sometimes at one task) for one or more years. This should expose the student to a wider variety of industrial machines and processes as well as retard the tendency to exploit this inexpensive source of labor.

5. Machine maintenance and repair should be included in the curriculum in addition to the present emphasis on machine operation.

6. The entrance examination for vocational-industrial schools should be changed to include 50% academic knowledge and 50% mechanical skills.

7. A merit scholarship program should be established for factory workers to attend vocational-industrial schools since the evidence of this study indicates that many such workers have only an elementary education.

8. Cease emphasizing the terminal nature of vocational-industrial school education and study ways to provide night and vacation continuation courses for those aspiring to further their general education.

RECOMMENDATIONS FOR FURTHER RESEARCH. This study has shown the need for further research to help answer many complex questions regarding

the use of education as an instrument of policy in the emerging countries in general and in China in particular. Some of these questions related particularly to China are:

1. Are the attitudes of the Taiwan-born Chinese youth more or less receptive to vocational education than that of the Mainlander?
2. Are the manpower objectives of the Four-Year Plan realistic, or are the predictions of Chinese industries more accurate?
3. A study should be made of the Chinese attitude toward vocational education to determine more exactly the degree of influence this attitude is having on the vocational educational program.
4. What is the role of schools other than vocational-industrial schools in the economic development of the Republic of China?
5. How effective are the current expenditures for education and should allocations be revised?
6. Are current entrance examinations for the vocational-industrial schools accurately measuring the correct qualifications for skilled workers?
7. Should the junior vocational schools be converted to academic junior middle schools? (There appears to be no evidence that these schools contribute to the economy while there is evidence that students desire academic school enrollment in preference to vocational school.)
8. Should vocational guidance information and testing be included in the last year of elementary school (6th) and the 3 years of junior middle school (7, 8, & 9)?
9. Should the Chinese government attempt to increase the social status of skilled workers by any of the following methods:
 - a. Increasing salaries.
 - b. Having skilled workers serve in military factories as their military training rather than entering the regular army as foot soldiers.
 - c. Equalizing social welfare benefits between skilled workers and clerical staff members in such items as housing allowance and insurance.
 - d. Encouraging desegregation of factory dormitories (white shirts and blue shirts).

- e. Changing the terminology assigned to skilled workers (Chi Kung).¹

Some further questions which might be pertinent to any of the emerging nations are:

1. In what ways does education (and the various elements of the educational enterprise) contribute to economic growth?
2. What is the relative contribution to economic growth of the total educational program compared to alternative input resource allocations? Further, what is the relative contribution provided by each of the various elements of the educational investment (e.g., fundamental education, vocational education)?
3. For a particular country, what is the optimum allocation of its available resources among education and other investment needs and what is the optimum allocation among the various elements of the educational enterprise?

Research such as this would supplement this study and should shed new light on the important area of education and national goals.

1. For instance, worker (Kung) as a noun has a traditional low status connotation in China. Even the term for janitor (Kung Yu), a friend who works for you, might appear to have more prestige in some circles. Why not then enhance the skilled worker to the level of respect of a clerical staff member (Chi Shu Yuan) by either classifying him as a "skilled staff" (Chi Shih) or as "productivity staff" (Sheng T'sen Yuan). If such a suggestion were adopted, census documents and occupational information would have to be changed appropriately to include this new terminology.

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1. A microfilm of the original study, Education as an Instrument of National Policy for Economic Growth in the Republic of China may be obtained from University Microfilms, Inc., 313 North First Street, Ann Arbor, Michigan.

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BIBLIOGRAPHY

Public Documents

Books

Articles and Periodicals

Reports

Unpublished Materials

Other Sources

Sources in the Chinese Language

Sources in the Japanese Language

Interviews